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ABSTRACT

The 1978-79 evaluation report of an interstate bilingual early education program for migrant children from age 3 through third grade which operates year-round sites at Connell and Moses Lake, Washington and at La Grulla, Texas, presents a narrative program description and the progress made in each of five components: instruction, training, community and parent involvement, materials development, and management. The report discusses the mobile component of the Texas side which operates from April through October in temporary locations as the children move to northern work sites in the migrant stream; curriculum materials have been adapted which can be used effectively by bilingual migrant adults with limited academic background and no previous teaching experience. The goal, need, teaching process or involvement approach, and results for each component are given, along with a summary of findings. The report indicates that overall the program has met or partially met its objective in each component. Appendices include information on the testing procedures and data collection, statistical data on the analysis of test scores in the instructional component, and a technical report of the Bilingual Mini Head Start Test of Cultural Concepts. (NEC)

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ED211305

INDIVIDUALIZED BILINGUAL INSTRUCTION*

*PREVIOUS TITLE: TRAINING MIGRANT PARAPROFESSIONALS IN BILINGUAL MINI HEAD START

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FINAL EVALUATION

1978-79 Program Year

No. 15 in Series

Prepared by Beverly McConnell, Evaluator
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U.S. DEPARTMENT OF EDUCATION
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A NATIONALLY VALIDATED BILINGUAL PROGRAM

A DEMONSTRATOR/DEVELOPER PROGRAM IN THE NATIONAL DIFFUSION NETWORK

RC 013113

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TABLE OF CONTENTS

	Page
LIST OF TABLES	iii
LIST OF ILLUSTRATIONS	iv
PROGRAM DESCRIPTION	1
EVALUATION OF INSTRUCTIONAL COMPONENT	22
Preschool Concepts	22
Handwriting	26
Spanish Vocabulary	28
English Vocabulary	31
Math	34
English Reading	37
Spanish Reading	42
Cultural Concepts	45
Special Study: Comparison of "Continuity" Children and Non-continuity Comparison Group	47
SPECIAL ANALYSIS: IS THE EFFECT OF BILINGUAL INSTRUCTION DIFFERENT IN THE NORTH THAN IN THE TEXAS BORDER AREA?	53
Instructional Component Process Goals	62
EVALUATION OF STAFF DEVELOPMENT COMPONENT	63
EVALUATION OF PARENT/COMMUNITY INVOLVEMENT COMPONENT	66
SUMMARY OF ATTAINMENT STATUS OF PROJECT GOALS	71
TECHNICAL APPENDIX A	72
TECHNICAL APPENDIX B	95

LIST OF TABLES

Table		Page
1.	Comparative Ability of Teachers to Speak and Write English and Spanish, and Comparative Use of Spanish and English in the Home, of IBI Teachers in 1979	16
2.	Distribution by Percentile Score in English Vocabulary of Children Enrolled in the IBI Program Through 4/79, by Classified Language Dominance at Program Entry	76
3.	Cooperative Preschool Inventory Test Scores	77
4.	Wide Range Achievement Test, Spelling Subtest Scores	78
5.	Peabody Picture Vocabulary Test Scores, Form B in Spanish	79
6.	Peabody Picture Vocabulary Test Scores in English, Form A	80
7.	Wide Range Achievement Test, Math Subtest Scores	82
8.	Wide Range Achievement Test Scores, Reading Subtest	84
9.	Wide Range Achievement Test Scores, Reading Subtest	86
10.	Prueba de Lectura, Serie Interamericana Valoraciónes	87
11.	Scores on BMHS Test of Cultural Concepts	88
12.	Spanish and English Scores on Peabody Picture Vocabulary Test for Continuity and Comparison	89
13.	Wide Range Achievement Test Scores, Math and Reading Subtest, for Comparison and Continuity Group Children	90
14.	Comparison of Washington and Texas Students on Peabody Picture Vocabulary Test Scores in English and in Spanish, by Age and Group	91
15.	Comparison of IBI Children with the Project Norm Group on Peabody Picture Vocabulary Test Scores in English and in Spanish, by Age and Location	93
16.	Comparison of Washington and Texas Students on Wide Range Achievement Test Scores in Math and English Reading, by Age and Group	93
17.	Comparison of IBI Children with the Project Norm Group on Wide Range Achievement Test Scores in Math and English Reading, by Age and Location	94

LIST OF ILLUSTRATIONS

Figure — Page

1. Mean Raw Score on Cooperative Preschool Inventory, by Age Groups and Period of Attendance in IBI Bilingual Program, Compared to Project Norms and National Norms 24

2. Mean Raw Score after Various Periods of Attendance by IBI Project Children on Spelling Subtest of Wide Range Achievement Test 27

3. Mean Raw Scores in Spanish Vocabulary on IBI Translation of Form B of the Peabody Picture Vocabulary Test by Period of Attendance, and Primary Language Classification 30

4. English Vocabulary Scores on Form A, Peabody Picture Vocabulary Test, of Children Whose Primary Language is Spanish, by Age and Attendance Group Compared to the Project Norm Group 33

5. Mean Raw Scores and Standard Scores on the Math Subtest of the Wide Range Achievement Test, by Age and Period of Attendance in the IBI Program, Compared to the Project Norm Group and National Norms 36

6. Mean Raw Scores and Standard Scores of IBI Project Children by Age and Period of Attendance on the Reading Subtest of the Wide Range Achievement Test, Compared to the Project Norm Group and National Norms (Spanish Dominant Children) . . . 40

7. Raw Scores and Standard Scores of IBI Project Children by Age and Periods of Attendance on the Reading Subtest of the Wide Range Achievement Test (English Dominant Children) 41

8. Mean Raw Scores on the Prueba de Lectura for IBI Children with 200+ Days Attendance, and a Comparison Group from a Neighboring School District 44

9. Mean Raw Scores on the BMHS Test of Cultural Concepts by Age and Attendance Period 46

10. Mean Raw Score on Peabody Picture Vocabulary Test, Form B in Spanish and Form A in English for IBI Continuity Migrant Children and Comparison Group Migrant Children, by Grade Level 51

11. Mean Raw Scores and Standard Scores on Math and Reading Subtests of the Wide Range Achievement Test, for IBI Continuity Group Children and Comparison Group, by Grade Level 52

Figure Page

12. Average Scores on the Peabody Picture Vocabulary Test, Form A, in English for the Project Norm Group and IBI Children with 200+ Days Attendance, Separately Presented by Program Location 55

13. Average Scores on the Peabody Picture Vocabulary Test Form B in Spanish for the Project Norm Group and IBI Children with 200+ Days Attendance, Separately Presented by Program Location 56

14. Average Scores on the Wide Range Achievement Test, Reading Subtest for the Project Norm Group and IBI Children with 200+ Days Attendance, Separately Presented by Program Location 57

15. Average Scores on the Wide Range Achievement Test, Math Subtest for the Project Norm Group and IBI Children with 200+ Days Attendance, Separately Presented by Program Location 58

PROGRAM DESCRIPTION

Started in 1971 as a Research and Demonstration Program

In 1971 the office of the President sent a request to all federal agencies asking them to make "migrants" a priority for services. The Division of Bilingual Education therefore sent out a request for proposals (RFP) to educational agencies inviting them to submit proposals for the development of a research and demonstration model uniquely designed to meet the needs of bilingual children in migrant farm worker families. This program was funded in response to this RFP based on the proposal submitted by Intermediate School District 104 of Ephrata, Washington (a district providing services to schools which has since been legally dissolved).

Rationale for an Interstate Program Model

One of the key features of the model was to be the attempt to overcome some of the disadvantages faced by the migrant child from the discontinuity in his education caused by frequent moves. Parallel educational programs were therefore set up in Washington State and in Texas in a border community which was the home base for many of the migrants coming into Washington.

In addition to the parallel year-round programs, the program had a mobile component in which teachers from the Texas site moved north with clusters of families, continuing the bilingual educational program as a supplement to the schooling they received in northern schools in a series of temporary work locations.

Because this program operates on an interdistrict basis in Washington State and an interstate basis in Texas and at each of the temporary mobile

sites, it had to be designed as a supplemental program to whatever schooling was provided by the local school district in each area. For the preschool age children at each site, the program offers a day care program with the bilingual curriculum as its educational component. For school-age children a cooperative arrangement is worked out with the local school. If the kindergarten is half day the children attend the bilingual preschool in the other half day. For children up through third grade who are in school a full day, the bilingual program is provided either on a released time basis or after school, for an hour to an hour and a half each day.

Administration

The program has its administrative office in Pasco, Washington, with a second administrative office in Grulla, Texas (the home base site for the Texas program, and origin of the children served in the mobile component which follows children when they move). The Texas administrative and training staff relocate to the north for a period of time every year to provide supervision to the mobile component. The funding for the program is from a combination of grants, and the funding agency for the program has changed four times in its eight years of program operation; however, the administrative staff and operation of the program have been basically the same throughout. At present, grant funds go through ~~Sunnyside School District 201~~ Pasco School District No. 1 in Washington State--the program operates there and elsewhere as described subsequently.

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Rafael Guerra, administrator of the IBI Texas and mobile program sites, grew up as a migrant and financed his way through college and graduate school by working in the fields.

Rationale for Staffing with Migrant Adults

Because of the basic concept of this program--to provide continuity to children who moved about--the teaching staff for the program is entirely adults from the target population (more than half are parents of children served).

Efforts to establish educational programs that moved "in the migrant stream" had been made before this program was started. These earlier programs

had tried to staff with certified personnel, and this was almost entirely unsuccessful. There is a shortage of bilingual certified teachers. The job conditions in such a mobile program are unattractive--few people want to move several times a year, living in temporary housing in remote rural areas, if there is an alternative. With "bonus pay" some are willing to do it for a short time. Some with a "peace corps" set of values are interested in doing it. However, even these dedicated teachers are hard to use because of the problem of housing in the northern areas. Almost all available housing is reserved for the farm workers. The IBI program overcame this housing problem by utilizing as teachers other adults from families who were already housed because some of the family members work in the fields.

The adults in the migrant families make a sacrifice in order to teach in this program since, for the limited period of time it is available, farm work pays better than the teaching salaries they receive. But the teaching positions offered year round pay which offset the loss of the higher income they could have made with the seasonal work. The teaching adults recruited brought a special understanding and commitment to the job from first-hand knowledge of the difficulty of obtaining an education for a child moving in the migrant stream.

For these reasons, it was decided to staff this program with teachers from the migrant families, and the choice of curriculum materials and the development of training techniques all had to meet one basic criterion: will this be effective when used by previously untrained and inexperienced bilingual adults recruited from the target population. Certified staff are hired by IBI, but in the IBI program they work as supervisors and trainers--back-up staff for the paraprofessional teachers, and do not work directly with the children unless filling in as a substitute.

The problem of having to move staff obviously did not apply to the operation of the year-round sites. However, it was decided to have one basic program model and to use adults from the target population as teaching staff in these areas as well. Since there is a real shortage of available bilingual certified teachers in all three locations, this decision fit existing circumstances. The few certified personnel that could be hired were stretched by virtue of having them oversee a number of paraprofessional teachers and under them quite a few more bilingual children than could have been taught directly by the bilingual certified teachers.

Description of the Communities in Which the Program Operates

Year-round programs are operated at Connell and at Moses Lake in Washington State, and in La Grulla, Texas. The Washington State sites are in the "Columbia Basin Area" which was reclaimed from desert by the Columbia Basin irrigation project and is now very fertile farming country. Almost all the settlement in the area is new, related to farming made possible by irrigation.

In the Washington State sites the Spanish speaking population makes up less than one-fifth of the local population. Nearly all of these originally came to the area to work in the crops. Many settled permanently in the area. Others came in on a seasonal basis. Spanish speaking families served by this program find a combination of employment in the fields and in food processing plants. Most of the families are able to obtain work intermittently for one or both parents that will last anywhere from three months to ten months in a year. For the families settled in the area it is very common to take an extended vacation during the winter months when work is not available. Many travel to southern states, particularly Texas, and to Mexico during this time in order to see relatives, to take care of

property, or to escape the northern cold and celebrate the holidays. It is very common for children to miss several weeks of school during this traveling period.

There is relatively little support for the maintenance of Spanish in the northern communities in Washington. Except for scattered Spanish language programming on radio and public TV all the media are in English. Access to the better paying jobs is dependent upon development of English skills. The public schools have great difficulty recruiting certified teachers who are bilingual or Mexican American, although the number of such teachers is increasing in the last three years.

La Grulla, home base for the Texas program, is a small town almost on the Rio Grande River in the tip of South Texas. La Grulla takes its name from a migrating bird, now extinct. Like the bird, the population of La Grulla almost all (over 80%) migrates north every year to do migrant farm work. During the winter the employment statistics a few years ago

The Texas program operates in La Grulla: a dusty little Texas town on the Mexican border in the Rio Grande Valley. It is surrounded by mesquite bushes and skinny cattle. All social communication in La Grulla is in Spanish.

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were 5% (e.g., 95% unemployed during the winter home base period, except for occasional field work lasting a few days). Nearly all of the income of the families in town therefore comes from the annual migration to the north.

There is a great deal of support for the maintenance of Spanish in La Grulla. All of the families are Spanish speaking, and Spanish is reinforced by the availability of TV channels received from Mexico. There are a number of radio stations that are entirely in Spanish. Church services are in Spanish. Spanish is used in the few public services available in the town (a few tiny grocery stores, a pool hall, and a gas station). Although English is the primary language of instruction in the school, and many of the teachers are not Mexican American and do not live in La Grulla but drive in from a neighboring community, most are able to speak at least some Spanish and the language that would be heard among children in the halls or on the playground at the school is almost exclusively Spanish.

When the families migrate to the north, they usually have housing provided by the growers for whom they work. Most live in camps, housed in trailers occupied by other Spanish speaking occupants so the temporary northern community resembles the home base community. However, most communication in the stores, medical services, schools, and other out of camp contacts in the northern communities will require the use of English.

Description of Children Served

Over 95% ~~About 90%~~ of the children served in the IBI program at each of the sites have one or both parents who are Mexican American or Mexican. The program enrolls preschool children as young as three and school-age children up to third grade. Most of the children begin the IBI program while they are of preschool age, but some children do begin the program after they have reached school age.

Of all the children enrolled in the IBI program (through April, 1979) 47% were classified as monolingual in Spanish when they first enrolled in the program. This was operationally defined as having a score higher in Spanish than in English on an auditory vocabulary test, with the score on the English part of the test nine points or less, which was considered to be within the range that could be achieved on this test simply by guessing. This high proportion of children who are monolingual Spanish speakers when they start the IBI program is, in part, because IBI enrolls children of preschool age who have not had much contact with language outside that in their Spanish speaking homes.

An additional 28% are classified as Spanish dominant bilingual. These children also achieve their highest auditory vocabulary score in Spanish, but have a score in English that is higher than simply a guessing level. This classification includes children with a very minimal understanding of English, as well as children with a nearly balanced facility in English and Spanish. Together the Spanish dominant monolingual or bilingual children constitute 75% of the children who have enrolled in the IBI program.

The other 25% of the children have initial vocabulary scores that are higher in English than in Spanish. In most cases these children come from Mexican American families who are making an effort to switch language use to English. This has resulted in what many authors have described as "semi-lingualism"--a child who has "given up" Spanish before learning English. As an example, 93% of the IBI children listed as "Spanish dominant" have scores so low in English that they are "off the charts"--i.e., below the score achieved by the lowest 1% of English speaking children tested to develop norms for the test (Peabody Picture Vocabulary Test). However, 31% of the children IBI has listed as "English dominant" <u>also</u> have scores

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Some children come from Mexican American families who are making an effort to switch language use to English. Such children often seem to have "given up" Spanish before learning English.

lower than the lowest 1% of children in the national norms; i.e., they have more knowledge of English than of Spanish, and almost no knowledge of English. Fully half of the children enrolled in the IBI program as "English dominant" had initial scores in English below the 5th percentile by the test norms.

Of the total enrollment of children in the IBI program only 6% had initial scores in English high enough to place them in a "normal" range between the 25th and 75th percentile by the test norms, and less than one-tenth of 1% had initial scores above the 75th percentile. (Distribution of children by language dominance classification and percentile scores are included in the technical appendix in Table 2).

Curriculum

Because IBI has a relatively short period of instruction time available with the school-age children, it concentrates on teaching language skills and the basic academic subjects of reading and math. The preschool children, who are available for a longer day also receive instruction in handwriting, and activities aimed at development of certain preschool concepts and pre-academic skills. All children also have some activities designed to develop multicultural understanding.

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All curriculum materials used by IBI can be individualized or taught in small groups. Each has the sequencing built in so that the teacher does not need to have the knowledge on how to develop concepts from simple to more complex. Most of the materials are carefully programmed, so that even review is built in meaning that children retain what they have learned and add to it. The IBI model attempts to provide continuity not only in a geographic sense, but from year to year, and preschool to school. Each academic area has a continuous track curriculum from preschool through third grade. IBI has developed mastery tests keyed to the curriculum materials used, which help in placement of the child, and also help in planning remediation if the child forgets something during a move.

Besides the basic academic subjects of language, reading and math, all children participate in activities designed to develop multicultural understanding.

Most of the curriculum materials are relatively self-contained, using a teacher presentation book or child workbooks, or consumable worksheets such as in handwriting. IBI avoided materials which had to have a lot of teacher preparation, because many IBI teachers handle two or three groups a day, each for a limited release time period, and cannot spend extensive time in preparation. The use of one set of materials for teaching of reading, or of math, goes contrary to current trends which are to use management systems and to index a wide variety of curriculum resources. A program that

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Children in the IBI programs use an individualized curriculum. Migrant adults have been trained to use these materials and are the teachers in the IBI program.

moved obviously could not carry a "resource room" with it. However, even in the year-round sites, it was decided to limit the curriculum materials to one series because it was found that the most effective teacher training was that which was most specific to the curriculum used--that limiting the curriculum to a manageable set meant teachers could be trained to use it effectively in a relatively short time.

Language of Instruction

All teachers are bilingual. They use both languages in teaching, switching freely from one to another with individual children in their group depending on what the child seems to understand. Children of mixed language

capacity will be assigned in the same group, so the children who initially do not use much English or much Spanish themselves hear the other language used with other children. This develops their auditory comprehension of both languages from classroom communication. In addition to learning languages from usage in the classroom, both Spanish and English are systematically taught using a structured oral language program (described more fully in the evaluation where language gains are reported).

It has not been the policy to establish any period during the day in which use of one or the other language is "restricted" to force children to learn the language of choice. Project staff were aware of the arguments for language separation, and alternative systems such as alternating day use. However, with the irregular attendance patterns of migrant children this did not seem practical. The program also found it impractical to strive for a gradually changing percentage allocation of time to one language or the other because new children enroll in the program virtually every week throughout the year. At any one time the children enrolled would represent vast differences in the period of prior attendance as well as language capability, making it impossible to arrive at a reasonable basis for allocating language use that could be applied across the entire program or even small instruction groups.

Because of the special circumstances faced by a migrant child (changing schools), the I&I program begins reading instruction in English using the Sullivan programmed reading series. It also uses programmed readers to teach reading in Spanish.

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The project teaches reading in both English and Spanish. In the IBI program English reading is started first, and Spanish reading is introduced after a given level of proficiency is reached in English in order to avoid confusion over phonetic differences during the period when the child is first learning decoding skills.

Recognizing that this sequencing of reading instruction is contrary to established practice, the decision was made because parents were concerned that if English reading was delayed, children would be seriously at a disadvantage when they enrolled in northern schools with children who had been learning to read in English from the beginning of first grade. In a stationery program in which the children are stable in one school system this would not be a concern because whatever sequencing of instruction is followed, it applies to all children so none are at a disadvantage. It has to be a concern in situations such as IBI faces where children move in and out of a school system and transfer to other schools where there is no teaching in Spanish.

Project staff weighed this decision very carefully when parents expressed their concern. They made the decision to teach reading in English first when it appeared that the research was by no means clear as to what sequencing of languages was most effective for teaching reading.*

Classroom Organization

The preschool centers operated at the year-round sites have academic work areas where children work at small tables with the teacher moving around them, or where the children sit around the teacher for a lesson involving a

*See Patricia L. Engle, "Language Medium in Early School Years for Minority Language Groups," Review of Educational Research, No. 2 (Spring 1975): 283-325.

teacher presentation book. The rest of the space is divided between open area for larger group activities and interest centers, common to most preschools. The school age program uses similar work areas, and they have a corner or bookshelf to keep activities and materials to be used during independent choice periods.

The daily schedule has academic periods in which the teacher organizes and manages the learning time. It also has child choice periods in which the child selects and organizes use of his time. The choice periods are used as a reinforcer for the shaping of academic behavior--access to the materials and activities is contingent upon completion of "contracts" for the academic materials, or in token exchange for tokens earned during the academic period in some subjects. In disseminating the program IBI has taken the position that use of tokens or contracting system is optional to the adopting district, but that use of the positive reinforcement teaching methods is essnetial, whether or not it is backed up by time management or tangible reinforcers. IBI has appropriate training instruments for any of these options, and all have been field tested at IBI sites.

Teacher Selection and Training

An earlier section in this program description explained the project's rationale for using only migrant adult paraprofessionals as teachers in the IBI program. At each site where the IBI program is operated, there is a parent/community advisory group. The committee consists of a number of parents plus the training and supervisory personnel for the local site. Although the school district has legal authority to finally approve all personnel it has in fact followed the recommendations of the local screening committee in all cases for the selection of paraprofessional teachers.

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Teachers are selected by the local parent/ community advisory board. About half the teaching staff have children or grandchildren in the program.

Both men and women were employed as teachers, although primarily women have applied. Preference was given for applicants who had completed high school or had a G.E.D., but at least one-third of the teachers employed by the program have had less than a high school education when first hired.

The proficiency of the applicant in the two languages is determined by oral interview, and sometimes by having the applicant read something in each language, sometimes by having the applicant do on the spot translation. Screening procedures for teacher applicants have tended to vary, but in all cases only informal measures were used to judge language facility.

For the 1979 evaluation, the evaluator asked ~~current~~ teaching staff at each site to complete a self-rating form asking them to rate their ability to speak English and Spanish, and their ability to write English and Spanish on a 5-point scale. It also asked them to estimate the percentage of time they used Spanish at home.

The table below summarizes these results in terms of the comparison between the two languages, i.e., whether the teacher felt she/he spoke or wrote Spanish or English better or the same, and which language was used more in the home. Since there was a different pattern among teachers in the Washington State centers and the Texas-mobile centers, the results are separately reported.

TABLE 2

COMPARATIVE ABILITY OF TEACHERS TO SPEAK AND WRITE ENGLISH AND SPANISH, AND COMPARATIVE USE OF SPANISH AND ENGLISH IN THE HOME, OF IBI TEACHERS IN 1979

	Washington State Teachers			Texas-Mobile Teachers		
	Better in Spanish	Better in English	Same	Better in Spanish	Better in English	Same
Speak	15%	43%	43%	84%	0%	16%
Write	10%	52%	38%	29%	50%	21%
Language used most in home	38%	33%	29%	78%	0%	22%

The fact that most teachers in both Washington state and Texas felt they could write English better than Spanish reflects the fact most were educated in schools in which only English was taught--the exceptions, who felt they could write better in Spanish had received all or part of their education in Mexico.

The differences in comparative ability to speak English and Spanish and the comparative use in the home reflects the different status of Spanish and English in the north and in the Texas border community.

The method for training teachers evolved by systematically trying different approaches for the first three years of project operation. The most effective training method was found to be inservice training in which

skills taught were very specific to the curriculum to be used, in which teaching skills were demonstrated as well as explained by the training staff, and in which actual classroom observation and feedback was used to determine if teaching skills had been mastered. The project has developed a few general classroom management training units, and two or three units specific to each curriculum area. Each has a criterion for mastery based on recorded observation of actual classroom interaction.

Although this training method was developed around the needs of teachers who did not have previous teaching experience or academic background, IBI has about a dozen other school districts which have adopted some aspects of the curriculum and related training. At these adoption sites a combination of certified staff and paraprofessionals have been trained, and the method seems to be as effective and as well received by the certified teachers as for the paraprofessional staff.

Every teacher in the IBI program takes part in a continuous program of in-service teacher training. However, teachers are assigned children from the first week of employment so the children's progress represents the effectiveness of teachers with varying amounts of training at any given time.

Evaluation Design

In order to judge whether children have benefitted from the IBI program it was necessary to have some reasonable basis for judging how the children would have progressed academically without benefit of the program. To do this, IBI uses a variation of a "baseline" evaluation design, and for some tests it uses a local comparison group.

In a "baseline" evaluation design, test scores obtained from children in a period before a particular program was put in place are used as the

"baseline" for comparison to the scores made by children of the same age or grade level who were tested some time after the new program was initiated. In its variation of the "baseline" approach, IBI pretests children when they first enter the IBI program. These initial scores are then accumulated into a data bank for each age level, which is subdivided according to the language dominance of the child tested. Because children enter the IBI program at different ages throughout the age range served by the program, over the years IBI has been able to accumulate enough scores at each age level to use as a comparison "baseline" for that age level. Children are then posttested after differing periods of attendance in the IBI program. Their posttest scores are compared to the scores for that age level in the project's "baseline" bank of pretest scores.

Because the migrant children served by IBI attend irregularly and have many disruptions in their schooling, testing on fixed calendar dates would have been meaningless. Children tested on a given day would have had vastly different periods of program attendance up to the test date. In addition, on any given day many children who had been served during the year might be absent and would be missed. The project, therefore, keeps attendance individually on each child, and posttests are given after the child has attended 100 days, and subsequently at 100 day attendance intervals. As different children reach these testing intervals at different times some posttests are given each month throughout the year. As some new children enroll each month, the pretests are also being given throughout the year, so that the time of testing tends to equalize out for the two groups.

When analysis is done for an evaluation, the tests are grouped by age level and attendance, and compared to the "baseline" of pretest scores, referred to in the evaluation as the "project norm group" of the same age.

Although the posttests were given at different times, each represents a known period of program attendance. And the pretests going into the baseline of scores called the "project norm group" represent actual scores obtained by project children through whatever collection of educational experiences was available to them up to the time they entered the IBI program. As such, they represent a reasonable basis for judging how project children would have progressed academically without the IBI bilingual program.

Because fewer children enter the IBI program in the school-age years, it took longer to accumulate a baseline of pretests at the upper age ranges. However, the project had tested migrant school-age children in a neighboring community to La Grulla for a special study on the effects of mobility (see evaluation instructional goal nine). A statistical test was run comparing the distribution and means of scores of project children's pretests, and the test scores for migrant children in the neighboring school district, and no significant differences were found. On this basis, it was judged that the migrant children in the neighboring community represented the same basic population of children as those served by the IBI project, and these test scores were added to the data bank as part of the "project norm group" to increase the size of the norm group for purposes of statistical analysis.

By giving a language test at the same time as the achievement tests, IBI separates test scores by the language dominance of the children and is able to do a separate analysis by language group for the academic skills in which language makes a significant difference in children's pretest scores. It was found that language dominance did make a difference in testing vocabulary and reading, ~~and that~~ It did not make a difference in testing math, handwriting or preschool concepts so long as the tests were administered in the child's primary language, so the analysis pools all the test scores for these subject areas.

so statistical analysis is done seperately by dominan groups.

IBI selected this "baseline" approach to evaluation instead of using a control group or a concurrent "comparison" group of different children for a number of reasons. By having the project children form their own norm group, it was possible to assure the best possible fit between the characteristics of the "experimental" and the "comparison" group on factors likely to affect their test scores, such as socioeconomic status, ethnicity, language background, or educational level of parents. A great many evaluations of bilingual programs are of questionable validity because the comparison group used differs from the children in the bilingual program on one or more of these essential characteristics. (The American Institute of Research national evaluation of Title VII bilingual programs is one of the best, or "worst" examples of a mismatch between experimental and comparison groups. It established that only 17% of the children in its comparison group were non-English speaking or bilingual, compared to 74% of the children in the bilingual classrooms*--yet this group was used as the "standard" for judging how "bilingual or non-English speaking" children might have done with conventional rather than bilingual instruction.)

The one drawback in use of collective pretest scores as a baseline project comparison group, is that it makes it more difficult to describe the educational alternative represented by these test scores than when an intact comparison group uses a prescribed alternative educational approach. The children who entered the IBI program came from different school districts in different states. In addition most had moved several times in their young lives, bringing them into contact with still other schools and the variety of

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*SOURCE: American Institute for Research, Evaluation of the Impact of ESEA Title VII Spanish/English Bilingual Education Program, Volume I: Study Design and Interim Findings, February 1977, Tables VI-B-17a, VI-B-18a, VI-B-20a, VI-B-21a, Appendix pages 123-127, ERIC Report ED 138-090).

regular and special programs now available for low SES, migrant or bilingual children. In its very diversity it is perhaps "typical" of migrant education--a collection of unrelated and possibly even conflicting educational approaches experienced over a period of time. Collectively these pretest scores represent the effect of "conventional" education which in the United States at present means in most cases instruction only in English. None of the children, prior to entry to the IBI program, had consistent access to bilingual instruction or bilingual teachers.

This general description of the program has been included to provide the general reader with information on the type of educational program being evaluated, and the means that have been used to judge its effectiveness. Other details on the project evaluation design and methods of statistical analysis may be found in the technical appendix.

1979 EVALUATION OF PROGRESS: INSTRUCTIONAL COMPONENT

GOAL 1. CHILDREN THREE TO FIVE WILL LEARN PRESCHOOL CONCEPTS.

THE IBI CURRICULUM TO TEACH PRESCHOOL CONCEPTS: IBI combines concept and language learning using the DISTAR® Language curriculum published in English by SRA, and published in Spanish by Bilingual Mini Schools (a non-profit corporation which developed the Spanish translation for the IBI program, and is now licensed by SRA to sell the Spanish edition to any schools that would like to use it).

This curriculum is taught to a small group of children from a teacher presentation book. The concept content includes such things as comparisons (the glass is full, the cup is empty); positional words (the paper is on the book, the dog is under the table); classification (a dog and a mouse are animals); etc. The 1976 edition has an "action track" in which children follow simple commands. Use of physical actions and use of real objects to supplement the picture presentation help add meaning, especially for younger children.

The IBI staff developed a "Pre-DISTAR" series of lessons for very young children (three and early four) in Spanish and English. These lessons require children to make pointing responses or oral responses that require only single words to two-word phrases. This is used as a transition into the published DISTAR® which requires children to use whole sentences in responding almost from the beginning lessons.

Lessons are given in each language to preschool children, at least 20 minutes a day in Spanish and another 20 minutes a day in English. In this way children learn the meaning of the concept in their primary language, and it is then reinforced as they learn the vocabulary in their second language. In addition to these lesson periods, two or three unstructured learning periods (child choice) take place each day, and concept learning activities using a variety of common preschool play materials take place in these periods.

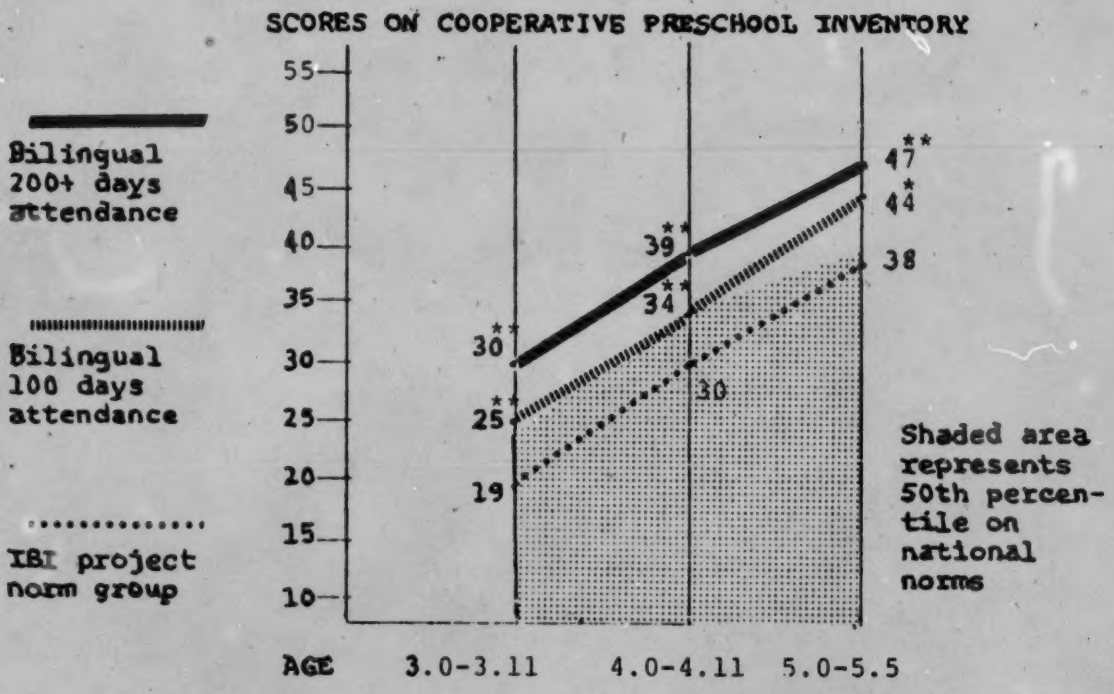
PROJECT RESULTS: Children are tested on the Cooperative Preschool Inventory to measure their knowledge of preschool concepts. This is a nationally standardized test originally developed to measure the outcome of Head

Start programs. It is published in Spanish and English, and project children are tested in their primary language. It measures concepts usually considered important as school readiness skills: the ability to understand and follow directions, size and number concepts, the recognition of colors and shapes, etc.

Figure 1 which follows presents the test scores of project children after differing periods of attendance in the IBI program. See the section on evaluation design on pages 17-21or the technical appendix for more information on the composition of the project norm group. The IBI project norm group shows how children at each age level would have scored without the IBI program. At every age level the project norm group has scored below the national norms; at ages three and four the average score is at the 30th and 35th percentile which means that the children averaged scores in the lower third compared to the national norms. This represents a very low level of academic readiness, particularly since the national norms for this test were based not on the general school population but on the tests of children from the lower socioeconomic group considered to be educationally disadvantaged.

After 100 days attendance in the IBI bilingual program the average scores for the project children at every age level were at or above national norms. After 200 or more days attendance in the billingual program the average scores of the children compared to the top third of those in the national norm group; for five-year-old children ready to start school the average score was at the 80th percentile, or in the top quartile.

For either 100 or 200 or more days attendance, the superiority of children in the IBI bilingual program over the project norm group is statistically significant beyond the .01 level, meaning that the possibility that this much difference would occur by chance is less than one in 100 .



National Percentile Scores	IBI 200+ days:	69th	67th	80th
	IBI 100 days:	53rd	50th	73rd
	Project norm:	30th	35th	49th

*The difference between this score and the project norm group of the same age is statistically significant at the .01 level.

**Statistically significant beyond the .001 level over the project norm group.

Detailed test score analysis is shown in Table 3 in the Technical Appendix.

FIGURE 1: MEAN RAW SCORE ON COOPERATIVE PRESCHOOL INVENTORY, BY AGE GROUPS AND PERIOD OF ATTENDANCE IN IBI BILINGUAL PROGRAM, COMPARED TO PROJECT NORMS AND NATIONAL NORMS.

TO SUMMARIZE THE FINDINGS IN FIGURE 1:

1. WITHOUT THE PROGRAM, PROJECT CHILDREN IN THE NORM GROUP SCORE WELL BELOW AVERAGE COMPARED TO THE NATIONAL NORM GROUP FOR THIS TEST.

2. THE SHORT TERM ATTENDANCE IN THE BILINGUAL PROGRAM (100 DAYS) BRINGS CHILDREN ABOUT EVEN WITH THE NATIONAL NORMS AT AGE THREE AND FOUR, AND INTO THE TOP THIRD OF THE NATIONAL NORMS BY AGE FIVE.

3. LONG TERM ATTENDANCE IN THE BILINGUAL PROGRAM (200 OR MORE DAYS) MEANS CHILDREN AVERAGE SCORES IN THE TOP THIRD BY THE NATIONAL NORMS FOR THIS TEST AT AGES THREE AND FOUR, AND IN THE TOP QUARTILE FOR CHILDREN AT AGE FIVE.

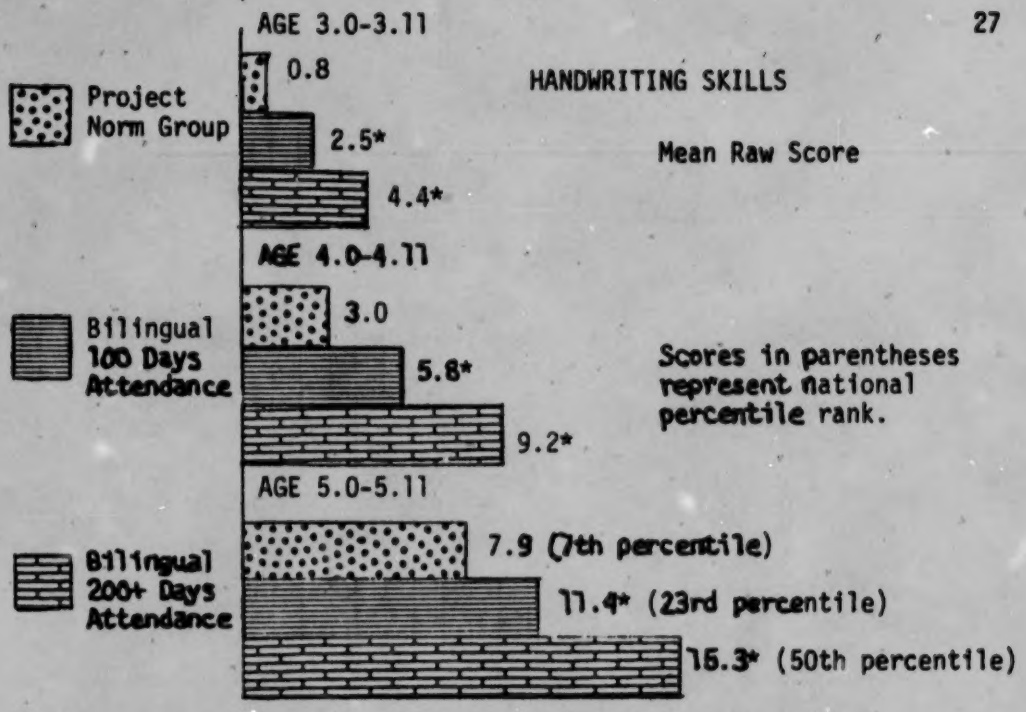
4. THE SUPERIORITY OF CHILDREN AFTER ATTENDANCE IN THE BILINGUAL PROGRAM OVER THE PROJECT NORM GROUP IS STATISTICALLY SIGNIFICANT (.01 LEVEL INDICATES THE POSSIBILITY THAT THIS MUCH SUPERIORITY WOULD OCCUR BY CHANCE IS LESS THAN ONE IN 100).

GOAL 2. PRESCHOOL CHILDREN LEARN HANDWRITING SKILLS.

THE IBI CURRICULUM TO TEACH HANDWRITING: IBI uses a handwriting curriculum developed by the University of Kansas for their Follow Through and Head Start programs. These consist of a series of 29 ditto masters from which practice handwriting sheets are duplicated by the project. With these the children shape their handwriting skills to greater levels of coordination. Each child can work at his own pace through these materials. After completion of the "levels" as the University of Kansas materials are called, the children go into a project adapted version of a handwriting series that is now out of print, Lyons and Carnahan "Write and See." The project has resequenced these materials and added in-book tests which teachers can use to check children's ability. For the youngest children not yet ready to hold a pencil, pre-handwriting exercises are given using chalk, crayons, etc. Children learn left-right sequencing and working from the top to the bottom of a page from this curriculum. Lessons approximately 10 minutes in length are given daily to preschool children.

PROJECT RESULTS: Children are tested on the preschool "spelling" section of the Wide Range Achievement Test as a measure of the visual motor skills involved in handwriting. This test requires the child to copy 18 marks of increasing difficulty level, and to write two letters of his name.

Figure 2 which follows compares the scores of the project norm group, who had not had the benefit of this type of instruction, to the scores of project children after 100 days attendance and after 200 or more days attendance. As the figure illustrates, children demonstrate increased handwriting skills the longer they participate in the program. The superiority of project children over the project norm group is statistically significant even after 100 days attendance, beyond the .001 level (meaning the possibility of this much difference being the result of chance is less than one in 1,000). In summary, the scores of the project norm group indicate that without the IBI program children demonstrate deficient skills in handwriting, and that the IBI curriculum is quite effective in increasing these skills among preschool children.



*The superiority of this score over the project norm group of the same age is statistically significant beyond the .001 level. Detailed test scores analysis is shown in Table 4 in the Technical Appendix.

FIGURE 2. MEAN RAW SCORE AFTER VARIOUS PERIODS OF ATTENDANCE BY IBI PROJECT CHILDREN ON SPELLING SUBTEST OF WIDE RANGE ACHIEVEMENT TEST.

TO SUMMARIZE THE FINDINGS IN FIGURE 2:

1. THE INDIVIDUALIZED HANDWRITING CURRICULUM USED BY IBI PRODUCES STEADY IMPROVEMENT IN CHILDREN'S SCORES THE LONGER THEY PARTICIPATE IN THE PROGRAM.

2. THE GAINS ARE STATISTICALLY AND EDUCATIONALLY SIGNIFICANT EVEN AFTER 100 DAYS (SHORT TERM INTERVENTION); WITH THE SUPERIORITY EVEN GREATER AFTER 200 DAYS.

3. BASED ON NATIONAL NORMS FOR THIS TEST, CHILDREN ENTER THE PROGRAM WITH AN EXTREMELY LOW LEVEL OF SKILLS (7TH PERCENTILE). BY 200+ DAYS ATTENDANCE THEIR AVERAGE SCORE IS AT THE 50TH PERCENTILE, BASED ON NATIONAL NORMS. (NORMS ARE NOT AVAILABLE BELOW AGE FIVE.)

GOAL 3. CHILDREN WILL IMPROVE IN SPANISH.

THE IBI CURRICULUM TO TEACH SPANISH: IBI field tested the Spanish edition of DISTAR® Language I, translated for IBI by Bilingual Mini Schools, a private corporation which has a license to sell the Spanish edition granted by SRA. The project selected these materials because they are very well programmed; that is, each new skill is practiced many times and then re-used as new skills appear. All skills are cumulative; they never disappear from the material. And because it is well programmed the children do not make frequent errors.

Spanish DISTAR® is taught in a small group from a teacher presentation book which clearly outlines the dialogue used in teaching--a feature which is very helpful to a paraprofessional teacher. It involves a fast paced verbal exchange in which children would be expected to make from 150 to over 200 language responses during a 20-minute lesson period. Because the language responses require both phrases and whole sentences, the children learn to use the language with all its connecting words instead of learning an isolated vocabulary which often occurs with other language approaches.

The IBI program accepts very young children, age three and four, for whom a curriculum called "Pre-DISTAR" has been developed by the project. This curriculum begins with action responses and then requires one- or two-word responses. Children can use it who are not yet ready for whole sentence responses required in the regular DISTAR® series. Pre-DISTAR is in both Spanish and English.

Lesson periods in oral Spanish of approximately 20 minutes per day are given all children in the preschool program and up to first grade. (DISTAR® Level I is appropriate to the first grade level. Level II is not yet available, so the project is waiting to extend the oral language program to the older school age children.)

In addition to the lessons in oral Spanish, all staff are bilingual and use both Spanish and English in the teaching of other subjects and in informal conversation throughout the day.

PROJECT RESULTS: Children are tested for receptive vocabulary in Spanish using the Peabody Picture Vocabulary Test, Form B, administered in Spanish using a project translation.

Tests results are reported separately by the child's primary language classification in Figure 3 which follows because there is a significant difference in the range of vocabulary scores related to the child's home language. As would be expected, these test results indicate that children whose primary language is Spanish have scores in Spanish much higher than those whose primary language is English, with or without the program. However, within each language group, the average scores of children receiving the IBI bilingual curriculum is higher in Spanish than the project norm group, who by and large had received no instruction in Spanish but picked up their Spanish from informal usage.

In noting that children in the IBI program improved in Spanish, it should also be noted that they have done this at the same time that they have greatly increased their knowledge of their second language, English. These findings are contradictory to the "balance effect" hypothesis proposed by Macnamara* in 1966 which proposed that the bilingual child paid for his/her acquisition of second language skills by a decrease in first language skills. These project results seem to indicate that language learning in Spanish and English is additive for the children involved in the IBI program.

Table 5 in the technical appendix gives the statistical detail of the Spanish vocabulary test scores. In every age group for both primary language classifications the average score for children in the IBI program 200 or more days is higher than the score of the project norm group of comparable age. This superiority is large enough to be statistically significant for children three, four, and five; it is not large enough to be statistically significant at age six.

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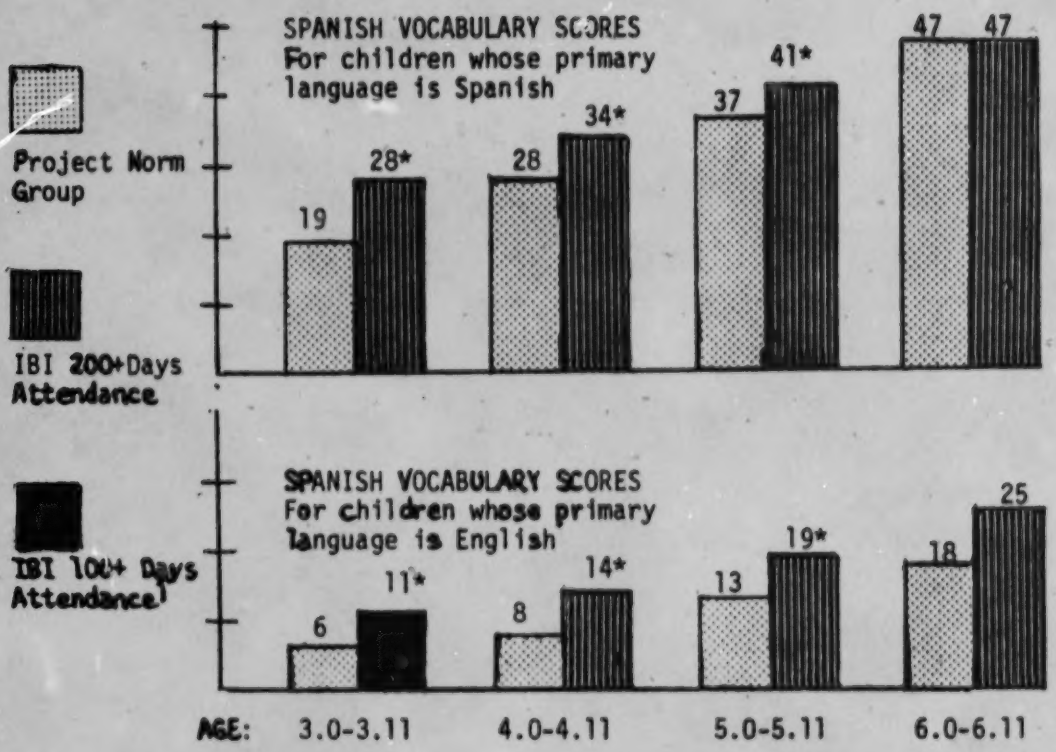
*John T. Macnamara, Bilingualism and Primary Education: A Study of Irish Experience (Edinburgh: Edinburgh University Press, 1966).



*The superiority of this score over the project norm group is statistically significant beyond the .01 level.

[1]For English dominant children at age three the scores of children after 100 days attendance was reported because there were less than ten children with 200+ days attendance.

Detailed test score analysis is shown in Table 5 in the Technical Appendix.

FIGURE 3. MEAN RAW SCORES IN SPANISH VOCABULARY ON IBI TRANSLATION OF FORM B OF THE PEABODY PICTURE VOCABULARY TEST BY PERIOD OF ATTENDANCE, AND PRIMARY LANGUAGE CLASSIFICATION.

TO SUMMARIZE THE FINDINGS IN FIGURE 3:

1. BOTH SPANISH AND ENGLISH DOMINANT CHILDREN SHOWED GAINS IN SPANISH UNDER THE IBI CURRICULUM.

2. COMPARED TO THE AVERAGE SCORES OF THE PROJECT NORM GROUP OF THE SAME PRIMARY LANGUAGE CLASSIFICATION, THE SUPERIORITY AT AGE THREE, FOUR, AND FIVE IS STATISTICALLY SIGNIFICANT.

GOAL 4. SPANISH SPEAKING CHILDREN WILL IMPROVE IN ENGLISH.

THE IBI CURRICULUM TO TEACH ENGLISH: As described earlier both English and Spanish are taught each day (sometimes every other day depending on the length of time available with the children at a particular site). The DISTAR® Language curriculum is used. This is carefully programmed, provides fast paced oral language practice, use of the language in context and in whole sentences. The context of the lessons involves language useful to understanding school usage vocabulary, reasoning skills, and readiness concepts.

The English Language curriculum is available from SRA at three levels and is used through third grade (the project only goes to third grade). Children are started on the program at the preschool ages. If the children are very young they started in the IBI Pre-DISTAR curriculum. This shapes their ability to follow a teacher presentation in a small group, respond when asked, and starts with pointing responses leading into responses that require use of one or two words.

In addition to lessons in oral Spanish and English, both languages are used in teaching other academic subjects and informally interacting with children during child choice activity periods, group activities such as singing, etc.

PROJECT RESULTS: Children are tested for receptive vocabulary in English using the Peabody Picture Vocabulary Test, Form A, administered in English.*

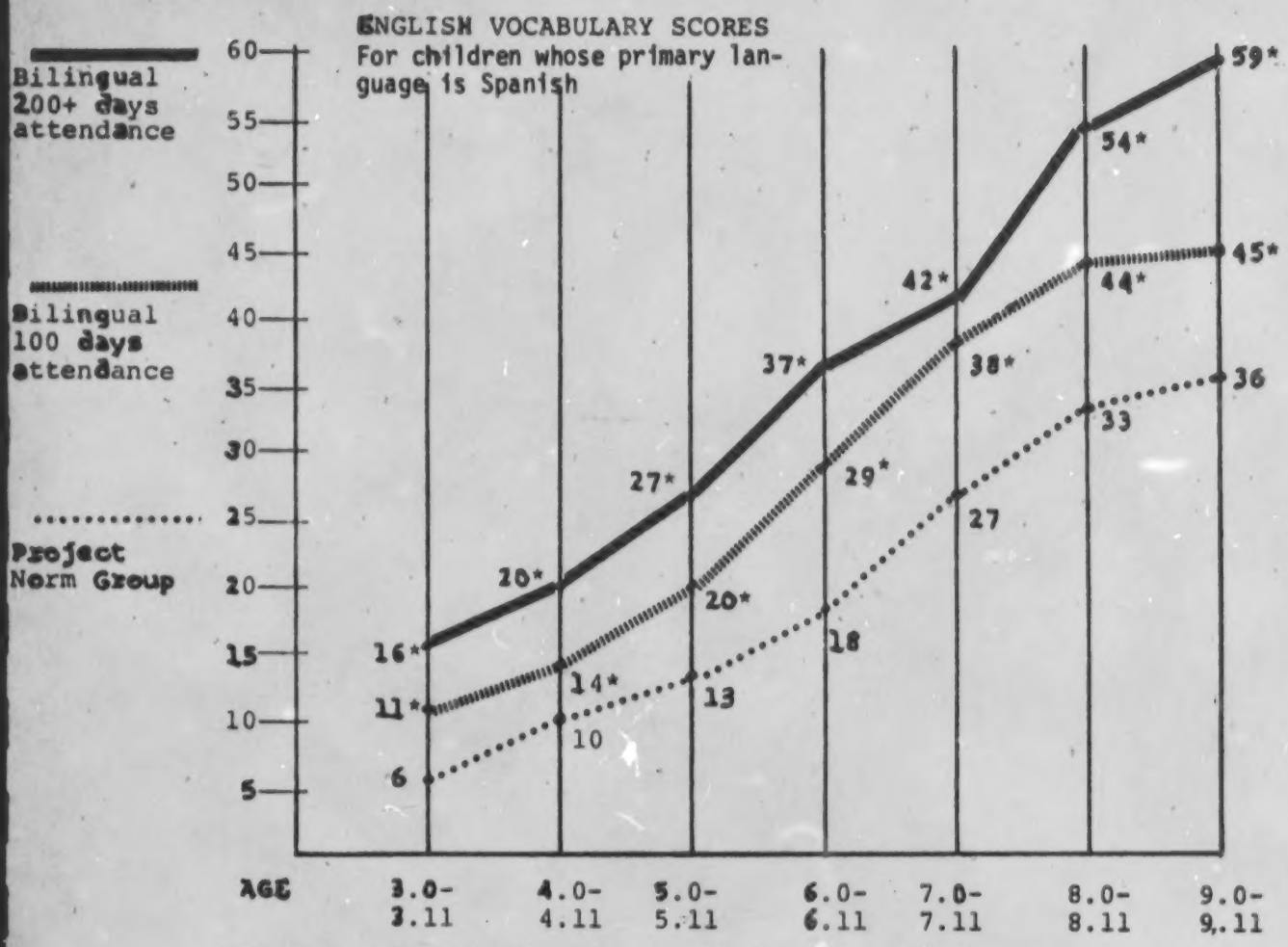
Figure 4 which follows indicates that children in the IBI bilingual program demonstrate very much higher scores in English than the children in the project norm group who had not had access to a consistent program of bilingual instruction.

The children who had received the IBI curriculum for only 100 days are included in the analysis partly because many school districts serving bilingual migrant children do not have such children for a full school

*Note the project also has an oral language test, the Pictorial Test of Bilingualism, which has been in use since 1978. However, not enough tests have been given yet to children new to the program to make up a baseline group for each age level that is large enough for statistical analysis. By next year the project will be able to report test results from this measure of oral language in addition to the PPVT test data on receptive vocabulary.

year. If these school districts are considering use of the IBI curriculum ESL component, these project results represent the effectiveness of the curriculum for children after only five months or less of program attendance.

The longer the children are in the project the greater their gain in English as indicated by the scores reported for the children with 200 or more days attendance. The superiority of the children with 200+ days attendance over the project norm group of the same age is statistically significant beyond the .001 level for every age group (meaning that the possibility of this much difference occurring by chance is less than one in 1,000).



*The superiority of this score over that of the project norm group of the same age is statistically significant beyond the .001 level.

Detailed test score analysis is shown in Table 6 in the Technical Appendix.

FIGURE 4. ENGLISH VOCABULARY SCORES ON FORM A, PEABODY PICTURE VOCABULARY TEST, OF CHILDREN WHOSE PRIMARY LANGUAGE IS SPANISH, BY AGE AND ATTENDANCE GROUP COMPARED TO THE PROJECT NORM GROUP.

TO SUMMARIZE THE FINDINGS IN FIGURE 4:

1. COMPARISON TO THE AVERAGE SCORES IN ENGLISH VOCABULARY OF THE PROJECT NORM GROUP SHOWS SIGNIFICANT SUPERIORITY FOR CHILDREN IN THE IBI BILINGUAL PROGRAM AT EVERY AGE LEVEL.

2. THE SUPERIORITY OF CHILDREN WHO ATTENDED FOR 200 OR MORE DAYS IS STATISTICALLY SIGNIFICANT BEYOND THE .001 LEVEL (E.G., THE POSSIBILITY THAT THIS MUCH DIFFERENCE WOULD OCCUR BY CHANCE IS LESS THAN ONE IN 1,000).

3. CHILDREN AFTER 200 OR MORE DAYS ATTENDANCE ARE MARKEDLY SUPERIOR TO THOSE TESTED AFTER ONLY 100 DAYS ATTENDANCE, INDICATING THAT THE GAINS IN ENGLISH ARE PROGRESSIVE THE LONGER THE PERIOD OF ATTENDANCE.

GOAL 5. CHILDREN WILL INCREASE THEIR SKILLS IN MATH.

THE IBI CURRICULUM TO TEACH MATH SKILLS: The IBI project has developed and published a pre-math curriculum in Spanish and English for the preschool age children. This is taught in small groups and in math related independent activities. Children learn numeral recognition, counting sequence, making sets, the concept of equal, etc.

After the pre-math series children begin using consumable workbooks published by Random House under the trade name of Singer "Sets and Numbers." This curriculum is based on set theory and is taught in units. IBI uses this series up through third grade (the upper level in this series uses hard cover books instead of the consumable workbooks).

These math materials can be completely individualized and a teacher can successfully work with a group all of whom may be on different pages or even in different books. Because of the disruptions in schooling experienced by a migrant population, the project used as one important criterion in the selection of curriculum materials whether the materials can be individualized.

The Sets and Numbers series are published in English only. This has presented no obstacle in their use by bilingual students taught by bilingual paraprofessional teachers. The teachers use both Spanish and English when working with the students, for instructions, praise, and correction. English terminology is used for the mathematical terms and concepts. Since these are new concepts to the children in whichever language they are encountered, the English terminology readily becomes part of their vocabulary.

PROJECT RESULTS: The math subtest of the Wide Range Achievement Test was given to project children in English or in Spanish (project translation). It was found that language is not a major factor on the test and that there were no significant differences in pretest scores accumulated for the project norm group based on language dominance. Therefore, the test scores in math were pooled for analysis.

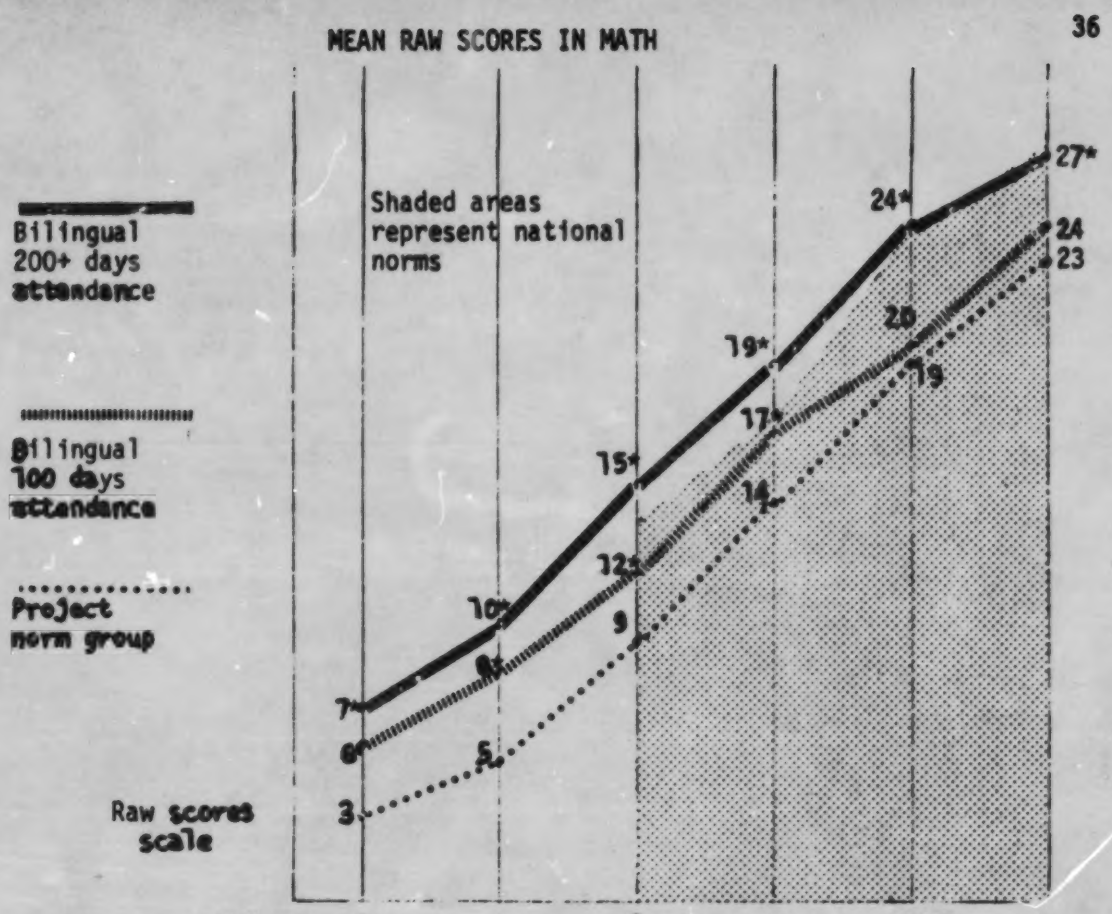
The graph in Figure 5 on the following page shows that children in the IBI bilingual program at every age level achieved significantly higher scores than they would have been expected to achieve under conventional educational programs, as represented by the project norm group.

The norm group scores are all below the 20th percentile based on the national norms for this test, e.g., only 20 percent of the children in the national sample had scores this low or lower.

The short term bilingual program, represented by the groups tested after only 100 days attendance are consistently higher than the project norm group, but still fall below national norms (the norms are published only for ages five and older). Children with long term attendance in the ISI bilingual program, 200 or more days, average scores above national norms through age seven, slightly below the national norm at age eight.

The superiority in math scores after 200+ days attendance was statistically significant at every age level, three through eight, beyond the .001 level of significance (e.g., the possibility that this much difference would occur by chance less than one in 1,000).

It is possible for differences in test scores to be statistically significant but not educationally significant. Using the rule of thumb that a score more than half a standard deviation higher than the reference group would also be considered educationally significant, the superiority of children at every age level in the bilingual program with the minimum 200 days attendance would be considered educationally significant. At all but age eight the difference is more than one full standard deviation higher than the reference project norm group of the same age.



Mean standard scores (Norm is 100)	IBI 200+ days	103.8*	106.4*	100.3*	97.2*
	IBI 100 days	94.7*	97.7*	92.5	90.9
	Project norm	81.3	87.2	86.9	87.2

*The superiority of this score over the project norm group of the same age is statistically significant beyond the .001 level.

Detailed analysis of test scores is shown in Table 7 in the Technical Appendix.

FIGURE 5. MEAN RAW SCORES AND STANDARD SCORES ON THE MATH SUBTEST OF THE WIDE RANGE ACHIEVEMENT TEST, BY AGE AND PERIOD OF ATTENDANCE IN THE IBI PROGRAM, COMPARED TO THE PROJECT NORM GROUP AND NATIONAL NORMS.

TO SUMMARIZE THE FINDINGS IN FIGURE 5:

1. WITHOUT THE BILINGUAL PROGRAM SCORES OF TARGET CHILDREN IN THE PROJECT NORM GROUP ARE FAR BELOW NATIONAL NORMS.
2. SHORT TERM ATTENDANCE (100 DAYS) IN THE BILINGUAL PROGRAM PRODUCES HIGHER AVERAGE SCORES THAN THE PROJECT NORM GROUP AT EVERY AGE LEVEL; HOWEVER STILL BELOW NATIONAL NORMS.
3. CHILDREN IN THE IBI PROGRAM FOR 200 OR MORE DAYS SCORE HIGHER AT EVERY GRADE LEVEL THAN EITHER THE PROJECT NORM GROUP, OR CHILDREN IN THE BILINGUAL PROGRAM ONLY 100 DAYS. THE SUPERIORITY OF THESE SCORES OVER THE PROJECT NORM GROUP AT EVERY AGE LEVEL IS STATISTICALLY SIGNIFICANT BEYONE THE .001 LEVEL.
4. THE IBI BILINGUAL GROUP WITH 200+ DAYS ATTENDANCE ALSO AVERAGES SCORES IN MATH ABOVE NATIONAL NORMS AT ALL AGE LEVELS EXCEPT AGE EIGHT.

GOAL 6. CHILDREN WILL GAIN READING SKILLS IN ENGLISH.

THE IBI CURRICULUM TO TEACH ENGLISH READING: The preschool reading program in IBI is started at about age four using the University of Kansas Reading Primer, which was developed for the Behavior Analysis Head Start and Follow Through programs. The teacher holds a teacher presentation book and children sit in a semi-circle around the teacher. Children learn to respond to pictures going from left to right and from the top to the bottom of the page, and the basic skill of blending sounds. With these word attack skills the children are then able to begin in the Sullivan programmed reading series, published by McGraw-Hill. Once into the Sullivan program, the children can work at their own pace in an individualized program.

The Sullivan materials use a phonetic approach with a controlled vocabulary so that the beginning reader only has to remember one sound for each letter (except for a limited number of irregular words which are taught as sight words). This feature of the curriculum was found to be especially helpful to children whose primary language is Spanish. It means they do not have to cope with the many different sounds which letters take in English until after they have mastered the beginning reading skills of word attack, blending, etc.

The curriculum is programmed so the new material is introduced slowly with continuous review of what has been learned before. The picture illustrations are clear and uncluttered which is helpful to comprehension of a child for whom English is a second language.

The teacher circulates children working in a small group at a table. Workbooks are starred by the teacher for new sounds and children raise their hands for assistance when they come to a star. This enables the teacher to help the child with the new sound on a one to one basis. The child repeats the sound so the teacher can check that the child is both hearing and making the correct sound when it is first encountered. This avoids the confusion Spanish speaking children may have in distinguishing sounds in English that are not found in the Spanish language. The teachers are also trained to ask many comprehension questions as they check children's work, and can make explanations in Spanish if there is a comprehension problem.

A teacher is easily able to work with a small group of children each working on a different page, even in different books (there are 23 books in the Sullivan reading series).

PROJECT RESULTS: Project children are tested individually on the reading subtest of the Wide Range Achievement Test. This is a nationally standardized test. Because differences in the child's primary language make significant difference in their ability to read in English, a separate analysis is done for Spanish and English speaking children.

Figure 6 which follows illustrates the effect of the IBI program on the English reading scores of children whose primary language is Spanish. The shaded area represents the national norms for this test at each age level. Line A represents the scores of the project norm group, i.e., the expected score by target group children without benefit of the bilingual program. As can be seen in the graph the project norm group's scores are far below the national norms, and the gap widens as the children get older.

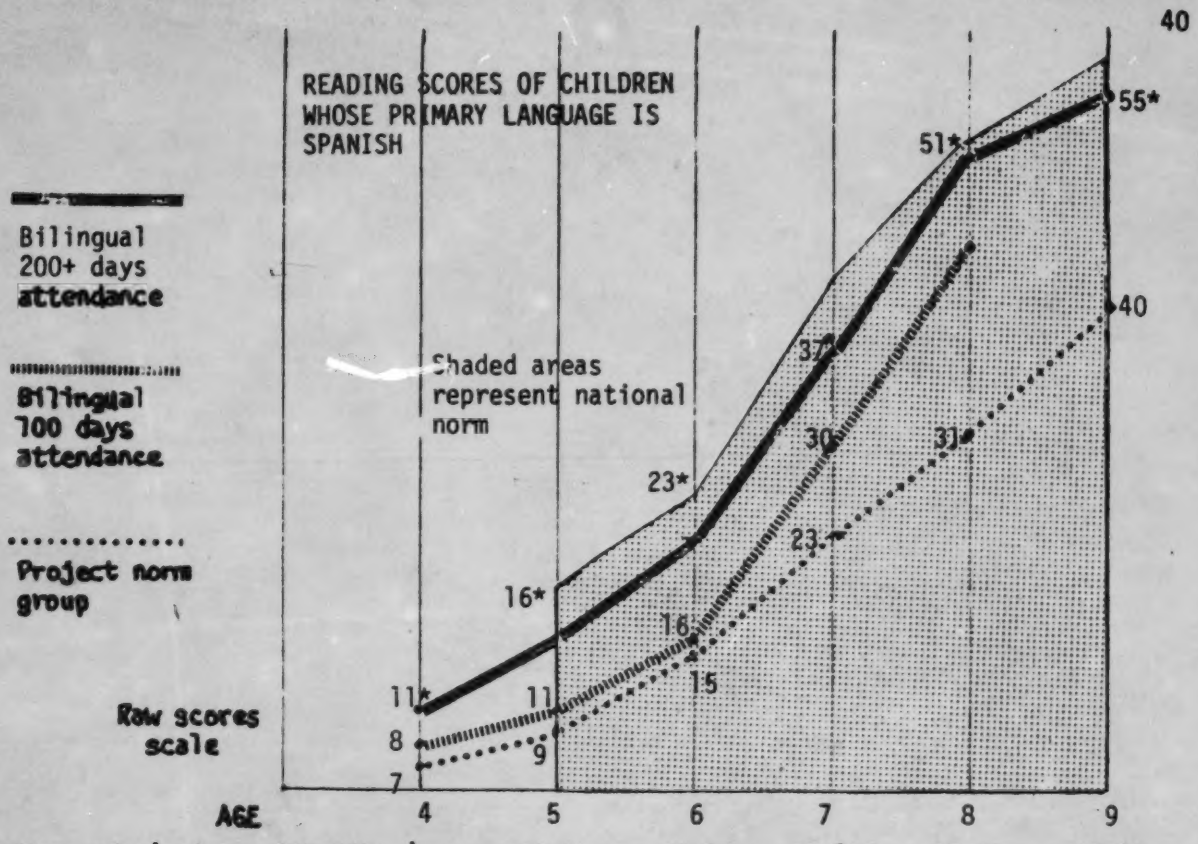
Children in the IBI program 100 days score higher at every age level than the project norm group. Children in the IBI program for 200 or more days have average scores higher than the 100 day test group, and much higher than the project norm group. The statistical detail for these scores is given in Table 6 in the Technical Appendix. The superiority of the children in the bilingual program 200+ days over the project norm group is statistically significant beyond the .001 level in each age group.

The average score in English reading for the Spanish dominant children in the project norm group (representing the effectiveness of "conventional" educational programs) is below the 13th percentile, e.g., only 13 percent of the children in the national norm sample had scores this low or lower. After children had attended the IBI bilingual program for 200 or more days, their average scores in English reading ranged between the 34th and 47th percentile for the different age levels tested. This is still below the 50th percentile which is the national average, but it is within the range considered "normal" for the reading skills measured by this test. The statistical details are presented in Table 8 in the Technical Appendix.

At all age levels the scores of children in the bilingual program are somewhat below national norms; however, the average score comes closer to the national norm as the children get older. The mean standard scores for each group are reported under the graph in Figure 6. The national norm in standard scores would be 100 for each age level. As noted on the graph the IBI children in the 200 day test group had a mean standard score of 94 at age five, 95 at six and seven, and 99.4 at age eight.

In terms of percentile scores the project norm group scores were at the 8th and 9th percentile in reference to the national norms for this test. The bilingual program children after 100 days averaged scores between the 14th and 19th percentile. After 200+ days, the scores of children ranged between the 37th percentile at age five and the 47th percentile at age eight.

Figure 7, which follows, and Table 9 in the Technical Appendix, present comparable data for children in the IBI program whose primary language is English. IBI accepts relatively few children who are English dominant and these almost entirely at the preschool or kindergarten level. For the age and attendance groups in which there were a sufficient number of tests for analysis (a minimum of ten) the pattern is similar, only slightly higher than the corresponding scores for Spanish dominant children. The expected level of scores without the program, represented by the project norm group, is below national norms; 25th percentile for age five and 27th percentile at age seven. Group mean scores are higher after 100 days in the IBI program; 39th percentile at age five and 34th percentile at age six. The IBI English dominant children with at least 200 days had the highest scores; 45th percentile at age five and 53rd percentile, e.g., above the national norms, by age six. After 200+ days the superiority of children in the bilingual program over the project norm group was statistically significant beyond the .05 level for ages four and five, not statistically significant at age six.



Mean standard scores (Norm is 100)	IBI 200+ days:	94.4*	94.9*	95.3*	99.4*	95.8*
	IBI 100 days:	84.6	84.1	90.4	-	-
	Project norm:	79.6	80.7	79.2	79.7	82.7

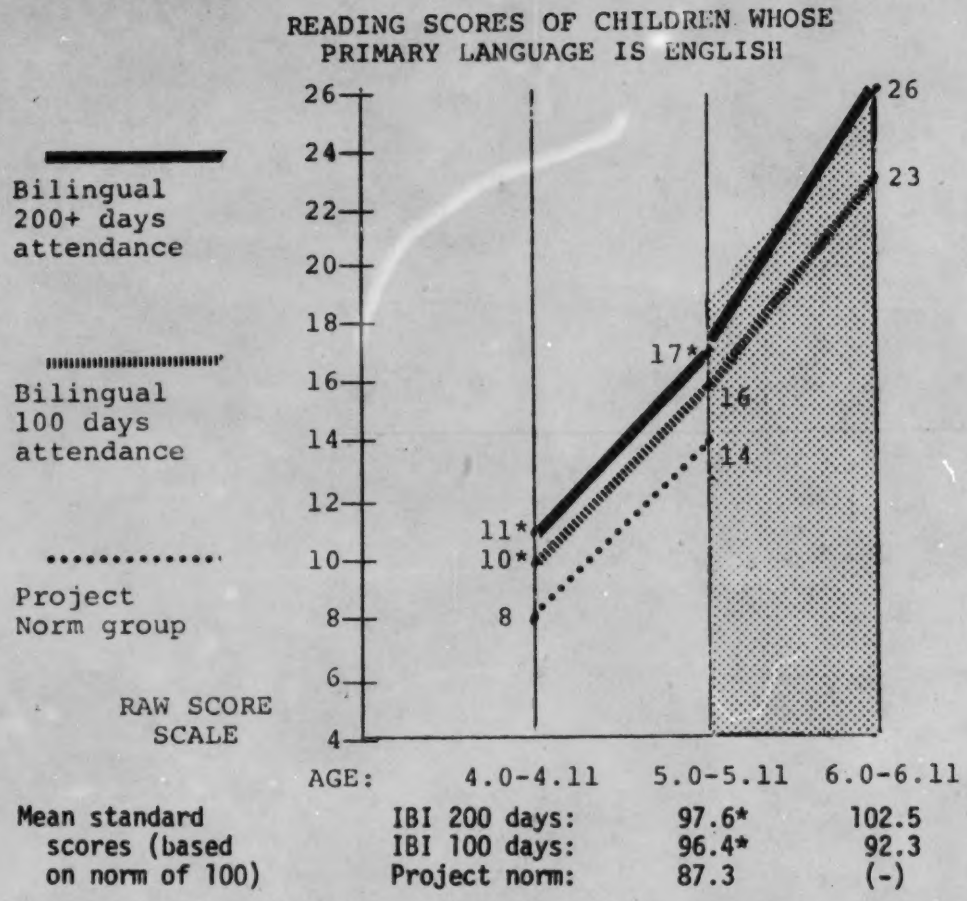
*The superiority of this score over the project norm group of the same age is statistically significant beyond the .001 level. Detailed test score analysis is shown in Table 8 of the Technical Appendix.

FIGURE 6: MEAN RAW SCORES AND STANDARD SCORES OF IBI PROJECT CHILDREN BY AGE AND PERIOD OF ATTENDANCE ON THE READING SUBTEST OF THE WIDE RANGE ACHIEVEMENT TEST, COMPARED TO THE PROJECT NORM GROUP AND NATIONAL NORMS. (SPANISH DOMINANT CHILDREN)

TO SUMMARIZE THE FINDINGS IN FIGURE 6:

1. PROJECT NORM GROUP SCORES INDICATE THAT WITHOUT THE BILINGUAL PROGRAM CHILDREN WHOSE PRIMARY LANGUAGE IS SPANISH WOULD BE EXPECTED TO HAVE READING SCORES IN ENGLISH FAR BELOW NATIONAL NORMS.

2. THE IBI CURRICULUM RESULTS IN HIGHER SCORES AT EVERY AGE LEVEL AFTER 100 DAYS, STILL HIGHER SCORES AFTER 200 DAYS, WITH THE SUPERIORITY AT 200 DAYS STATISTICALLY SIGNIFICANT BEYOND THE .001 LEVEL (POSSIBILITY OF CHANCE OCCURANCE LESS THAN ONE IN 1,000).



*The superiority of this score over the project norm group of the same age is statistically significant beyond the .05 level. Detailed test score analysis is shown in Table 9 in the Technical Appendix.

(-) Less than 10 in group, too few for analysis.

FIGURE 7. RAW SCORES AND STANDARD SCORES OF IBI PROJECT CHILDREN BY AGE AND PERIODS OF ATTENDANCE ON THE READING SUBTEST OF THE WIDE RANGE ACHIEVEMENT TEST. (ENGLISH DOM. CHILDREN)

TO SUMMARIZE THE FINDINGS IN FIGURE 7:

1. THE ENGLISH DOMINANT MIGRANT CHILDREN IN THE PROJECT NORM GROUP WHO HAD NOT HAD THE BENEFIT OF THE BILINGUAL PROGRAM HAD AVERAGE SCORES IN ENGLISH READING WELL BELOW NATIONAL NORMS. (THE SCORES SHOWN FALL BELOW THE 27TH PERCENTILE.)
2. AFTER 100 DAYS IN THE BILINGUAL PROGRAM THE AVERAGE READING SCORES ARE CONSISTENTLY HIGHER AT EACH AGE LEVEL. AFTER 200 OR MORE DAYS THEY ARE STILL HIGHER, WITH CHILDREN AT AGE SIX SHOWING AVERAGE SCORES SLIGHTLY ABOVE NATIONAL NORMS.
3. THE SUPERIORITY OF CHILDREN WITH 200+ DAYS ATTENDANCE OVER THE PROJECT NORM GROUP THE SAME AGE IS STATISTICALLY SIGNIFICANT BEYOND THE .05 LEVEL FOR AGES FOUR AND FIVE, NOT STATISTICALLY SIGNIFICANT FOR AGE SIX.

GOAL 7. CHILDREN WILL GAIN READING SKILLS IN SPANISH.

THE IBI CURRICULUM TO TEACH SPANISH READING: IBI uses Aprendiendo a Leer reading series, published by Behavior Research Lab. in Palo Alto. This is a parallel reading program to the Sullivan Programmed Reading in English. It has consumable workbooks in which children can work independently at their own pace, checking their own work through the marginal answer column. The teacher moves from child to child introducing new sounds, asking comprehension questions, and hearing children read aloud as the accuracy of the child's work is checked. There are only six workbooks in the Spanish series (compared to 23 in English), since the authors feel children can master the basic decoding and word attack skills in Spanish much more easily than in English because the sound-symbol system is much more consistent than it is in English.

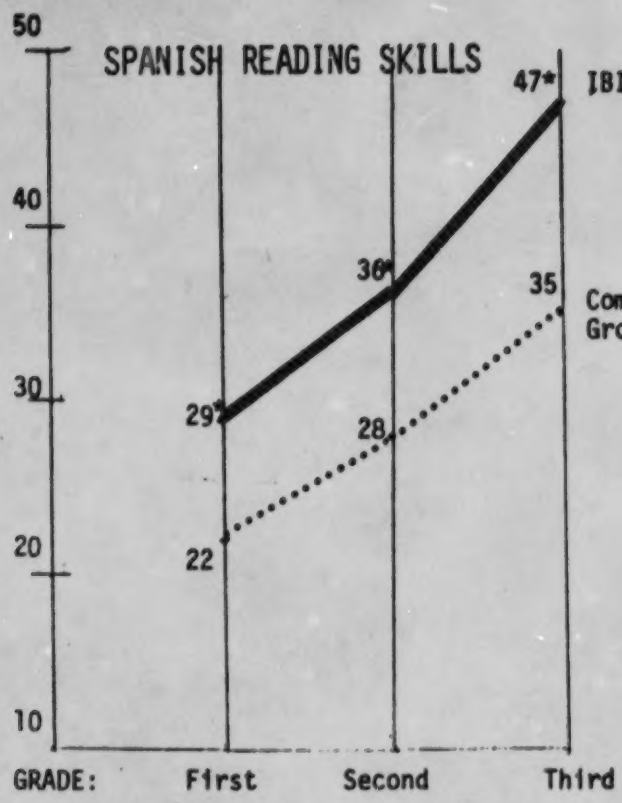
IBI developed its own Primer to teach the prereading skills and introduce a set of beginning sounds which the child can use to learn blending skills needed for working in the Aprendiendo a Leer reading series. The need to develop these curriculum materials delayed full implementation of a Spanish reading program in the IBI project until the 1977-78 program year. The IBI primer is called Comenzando a Leer. It is a direct instruction approach, taught from a teacher presentation book with the teacher modeling and requiring the children to give group responses, then individual responses to check mastery. It is programmed with new material introduced gradually with continuous review of what has been learned before.

PROJECT RESULTS: Skills in Spanish reading are tested using the Prueba de Lectura, Serie Interamericana. This is probably the most widely used test for Spanish reading utilized by bilingual programs in the United States.

IBI was unable to use the baseline model for evaluation of this objective because of the time period that would have been necessary to accumulate a baseline of scores at the school-age level (most children enter the IBI program at the preschool age). Also, children entering the IBI program at the northern sites had no prior exposure at all to the teaching of reading in Spanish and were simply untestable. Accordingly, a comparison group was tested at the neighboring school district

in Texas where other testing had been done. The children in this school are receiving regular instruction in Spanish reading. The children are migrant, Spanish dominant and on other tests have shown no significant differences from the pretest scores of children in the IBI program, indicating that they represent the same basic population group.

Figure 8 shows that the children in the IBI program average scores consistently higher in Spanish reading than the children in the comparison group, and that the difference increases for the children in the second and third grades. The superiority of the IBI children is statistically significant at each grade level.



*The superiority of this score over the comparison group of the same grade is statistically significant at the .05 level.

Statistical details are given in Table 10 in the Technical Appendix.

FIGURE 8: MEAN RAW SCORES ON THE PRUEBA DE LECTURA FOR IBI CHILDREN WITH 200+ DAYS ATTENDANCE, AND A COMPARISON GROUP FROM A NEIGHBORING SCHOOL DISTRICT.

TO SUMMARIZE THE FINDINGS IN FIGURE 8:

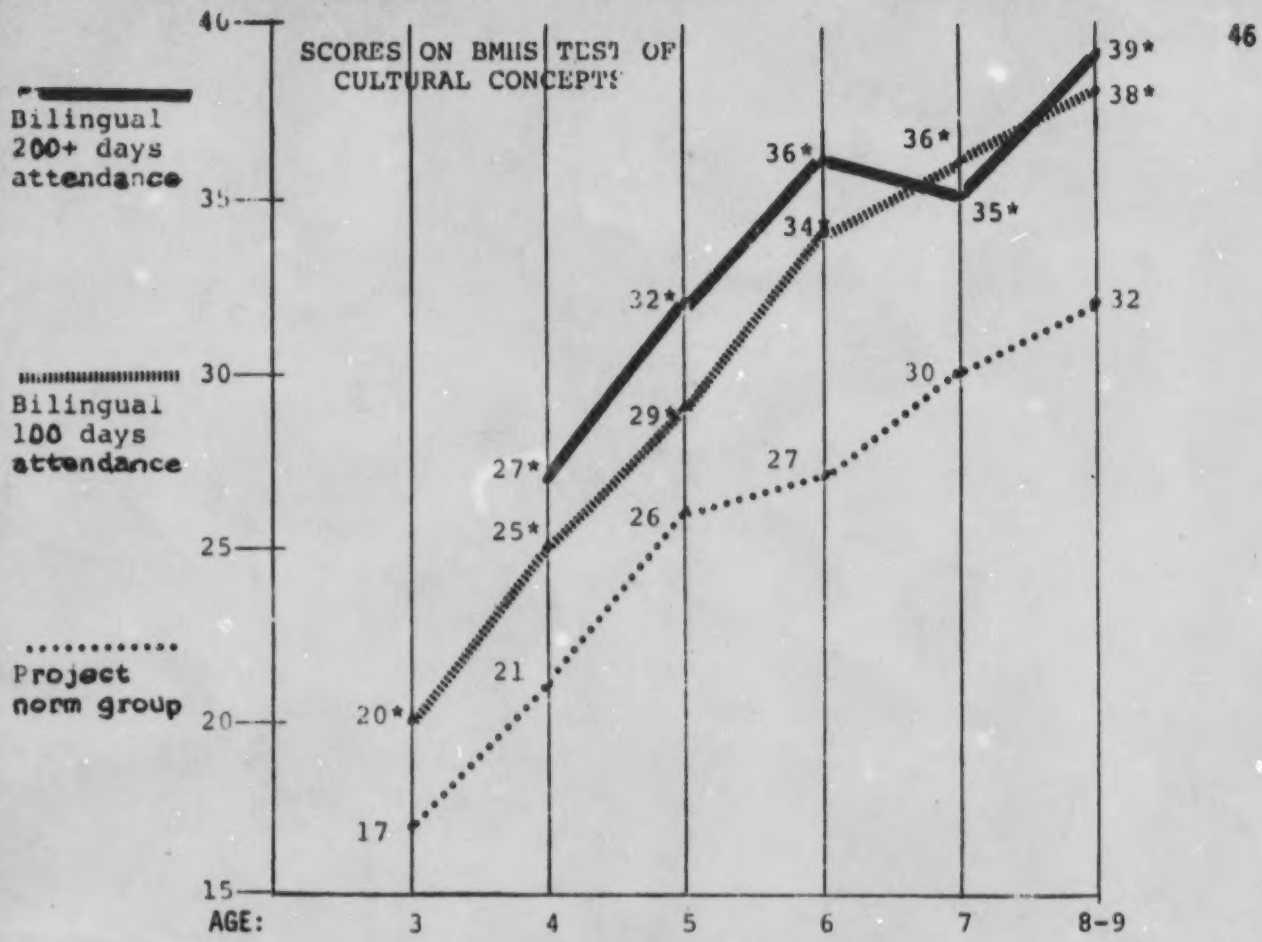
1. CHILDREN IN THE IBI PROGRAM AVERAGE HIGHER SCORES IN SPANISH READING THAN A COMPARISON GROUP FROM A NEIGHBORING SCHOOL DISTRICT.
2. THE MARGIN OF SUPERIORITY FOR CHILDREN IN THE IBI PROGRAM TENDS TO INCREASE AT EACH GRADE LEVEL.
3. THE SUPERIORITY OF THE CHILDREN IN IBI OVER THE COMPARISON GROUP OF THE SAME GRADE IS STATISTICALLY SIGNIFICANT.

GOAL 8. CHILDREN WILL LEARN ABOUT THEIR CULTURAL HERITAGE.

THE IBI CURRICULUM TO DEVELOP MULTI-CULTURAL KNOWLEDGE: The types of activities which are included in the IBI curriculum relating to knowledge about the United States, Mexican, and other cultures, include songs and dances, children's games, activities related to holidays and the birthdays of national figures, etc. IBI has prepared a book as a reference source on activities related to the Mexican culture. In addition it has prepared kits for teachers to use with materials and activity ideas related to many world cultures (Chinese New Year, Danish Christmas, etc.) and kits have also been prepared in reference to United States holidays and traditions. This is the only aspect of the IBI bilingual curriculum that is not sequentially presented. Time is scheduled regularly for these activities; however, use of this scheduled time is generally a matter of teacher choice and no particular content is mandated.

PROJECT RESULTS: The project developed its own test of cultural concepts. This is a 44-item test in six general content areas: songs, dances or games, clothing, food, holidays or celebrations, and national symbols. One-half of the items relate to Mexican culture, the other half to United States culture. The tester gives a question in Spanish for the Spanish items, in English for the United States items. In the case of music and dance items the cue is given as recorded music. In all cases the child selects one of four pictures related to the spoken word cue or the music cue. Further information on the reliability and validity of this test are given in the technical appendix.

Figure 9 which follows, and Table 11 in the Technical Appendix, document the gains made by children in acquiring cultural concepts, as measured by this test. The superiority of children tested after either 100 or 200+ days in the bilingual program over the project norm group (cumulative pretest scores) is statistically significant. Most of the gain appears within the first 100 days of attendance.



*Scores given are correct answers out of a 44-item test. The superiority of the children with 100 and 200+ days attendance in the bilingual program over the average scores of children the same age in the project norm group is statistically significant beyond the .05 level.

Statistical detail is shown in Table 11 in the Technical Appendix.

FIGURE 9. MEAN RAW SCORES ON THE BMHS TEST OF CULTURAL CONCEPTS BY AGE AND ATTENDANCE PERIOD.

TO SUMMARIZE THE FINDINGS IN FIGURE 9:

1. EACH PERIOD OF ATTENDANCE IN THE IBI PROGRAM PRODUCES A GREATER KNOWLEDGE OF CONCEPTS RELATED TO CHILDREN'S BICULTURAL BACKGROUND. MOST OF THE GAIN IS MADE WITHIN THE FIRST 100 DAYS OF PROJECT ATTENDANCE.

2. THE SUPERIORITY OF CHILDREN'S SCORES AFTER EITHER 100 OR 200 DAYS ATTENDANCE OVER THE SCORES OF CHILDREN TESTED BEFORE EXPOSURE TO THE PROGRAM IS STATISTICALLY SIGNIFICANT, AT EACH AGE LEVEL.

GOAL 9. CONTINUITY CHILDREN* WILL EXCEED COMPARISON GROUP.

THE NEED ON WHICH THIS GOAL WAS BASED: The IBI program has a mobile component which was designed to provide continuity of educational instruction from one location to the next for children who must move during the school year because the parents follow the crops. Such moves make it difficult for migrant children to learn basic skills such as reading and math because the approach may be very different from one school to the next resulting in confusion. Each curriculum has a different organization so the child may miss concepts that are essential to later understanding. Many areas to which the children move do not have a large resident population who are Spanish speaking, and therefore are not prepared to offer bilingual instruction. The child has the anxiety involved in adjusting to a new school, new teachers, which impedes learning. Schools may choose not to "use up" expensive workbooks for a child expected to attend six to eight weeks, so utilize less convenient and less attractive dittoed materials. At each site it takes time for placement, assignment of materials, organizational tasks, tests and paperwork. All of these constitute the hardships of acquiring an education in a family following the crops which represent the need for an alternative approach.

THE IBI PROGRAM TO ACHIEVE CONTINUITY AS CHILDREN MOVE: One component of the IBI project is the "mobile component." In this component children in the south Texas town of La Grulla are surveyed to see what northern locations their families expect to move to during the migrant season. Adults from migrant families going to an area where a cluster of children will be going are then recruited as teachers in the mobile component. During the winter months the teachers are trained, and they provide instruction in the year-round center at the Texas site.

When the migration is about to begin, the staff "site coordinator" travels north and lines up facilities for the preschool age children if no local programs exist. If there are local programs either the site coordinator or another of the administrative staff works out a cooperative

*Continuity children are project children in the mobile component of IBI who were enrolled both in Texas and in one or more northern locations under mobile teachers who moved with them from site to site.

agreement whereby the mobile staff will be assigned to assist in the local program in return for released time during the morning to continue the bilingual instruction of the children being followed from Texas. Similar contacts are made with the schools. Often the cooperating northern school will assist by assigning all children in the IBI program to the same school location and working with teachers to allow released time so children may continue the bilingual instruction under the mobile teachers for part of their school day. Usually the schools arrange some space for this instruction as well. Sometimes the school-age children must be taught in the labor camp areas where the families live in the evening or after school.

Most of the teaching staff from the La Grulla site do relocate to the north for part of each year--some moving to more than one location in the north before returning to Texas. All of the training and administrative staff also relocates for part of the year--staggering the time they are gone in order to provide ongoing supervision of both the mobile component sites (which are scattered in the north) and the Texas program which continues for a small proportion of the children year-round.

The mobile component is experimentally small--normally involving 60 to 90 children and a dozen or so staff members. At the same time in some years it has succeeded in following as many as 75% of the children who leave La Grulla with their families following the crops. It provides the advantage of continued bilingual instruction for these children as an addition to the schooling they receive through the schools in migrant host communities. It enables them to follow the instructional sequence of the IBI curriculum wherever they left off (and special mastery tests keyed to all areas of the IBI curriculum are used to discover material they may have forgotten and need to review after an absence). Children have familiar teachers for at least part of the day to bridge the anxieties of changing schools. Through the IBI curriculum children follow one program approach in basic skills subjects for part of the day which makes it less important that the changing programs offered by the schools they attend may leave gaps and discontinuities.

The educational program uses the same materials and teaching methods described elsewhere in this evaluation.

IBI MOBILE

PROJECT RESULTS: The "~~continuity~~" group of children were Spanish dominant school-age children from the mobile component who had been enrolled in the program both in Texas and in one or more northern locations, and who had been in the IBI program for at least 200 days. The comparison group children were in kindergarten through third grade from a neighboring community to La Grulla, Texas. Children in the comparison group were Spanish dominant, had approximately the same socioeconomic level as IBI project children, and came from families which migrated each year in order to do seasonal farm work. In making this special study in reference to the mobile component the factor of migration is held constant: only IBI project children who migrated were tested, only comparison group children who migrated were tested.

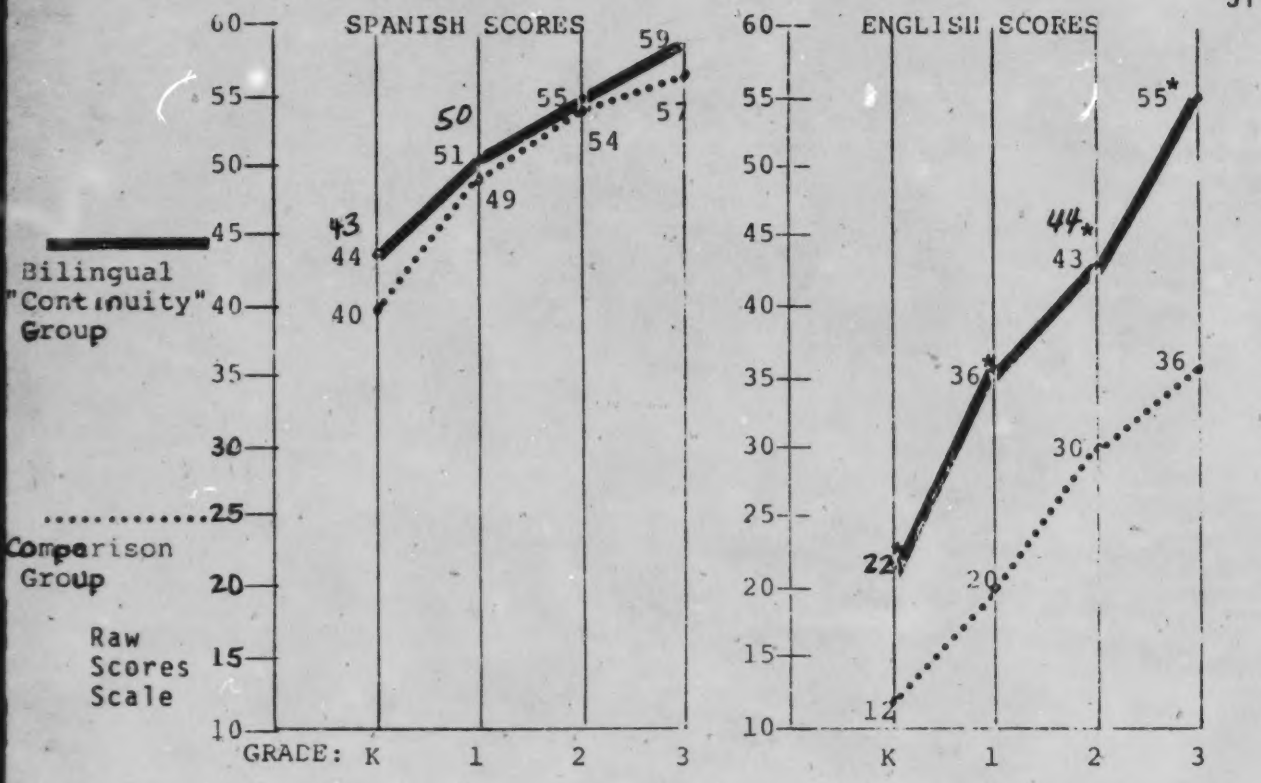
Figure ~~10~~ shows the vocabulary scores in Spanish and in English for the two groups. The IBI continuity children achieve a small superiority in Spanish at each grade level. In English the IBI continuity children achieve a great superiority over the comparison group with the gap widening at each grade level. By the third grade it will be observed that the mean score in English achieved by the children is only slightly below their score in Spanish.

The superiority of the IBI continuity group in English is statistically significant at every grade level over the scores of the comparison group. The superiority of the IBI continuity group in Spanish is not sufficient to be statistically significant. However, the fact that the children in the IBI bilingual program have maintained and improved their Spanish at the same time they have greatly improved their English is important in view of the controversy over "maintenance" vs. "transitional" bilingual programs. An underlying assumption in this controversy seems to be that maintaining Spanish skills must necessarily detract from the acquisition of English skills. The findings in the IBI project do not support this assumption.

Figure 11 also compares the continuity and the comparison group in their math and reading scores. In every grade level in both math and reading the superiority of the IBI continuity group is statistically significant beyond the .001 level (e.g., the possibility that this much difference would occur by chance less than one in 1,000).

The mean standard scores in math and reading are reported ~~under~~ in the detailed ~~grade columns in the graph.~~ These allow the comparison of both groups to test more analyses given on tables and on the technical appendix

national norms. For the national norms a mean of 100 is used and scores of from 90 to 109 represent an average range (the middle 50%) in reference to the national norm group. The migrant children in the comparison group have scores far below the average range in reading in English, and slightly below the average range in mathematics, a subject in which language is less of a factor. The IBI project children have scores within the average range in both subjects. In mathematics their scores run above the national mean in kindergarten and first grade, probably reflecting the participation of the children in the academic preschool program. Because of the preschool program children have been able to acquire English skills before reaching school age, and to maintain pace with other children from the majority culture and language in learning to read. As must be expected, the scores in reading in English of both groups closely parallels their scores in English vocabulary. These findings would seem to support the expansion of bilingual programs into the preschool years, so the child starts with a reasonable language facility and isn't playing catchup in the academic subjects that depend on English (e.g., English language arts).

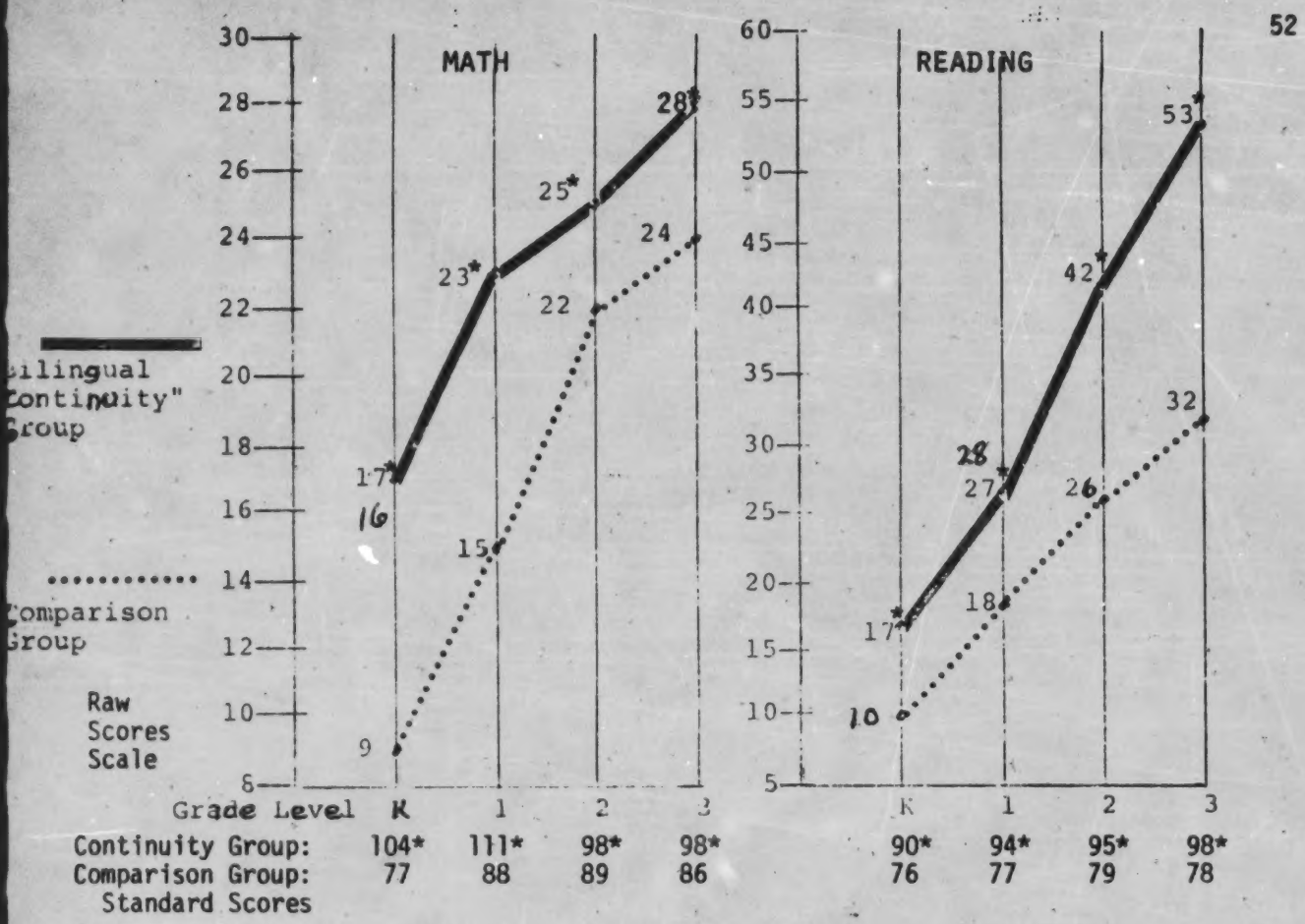


*The superiority of this score over the comparison group is significant beyond the .001 level. Statistical detail is shown in Table 11 in the Technical Appendix.

FIGURE 10. MEAN RAW SCORE ON PEABODY PICTURE VOCABULARY TEST, FORM B IN SPANISH AND FORM A IN ENGLISH FOR IBI CONTINUITY MIGRANT CHILDREN AND COMPARISON GROUP MIGRANT CHILDREN, BY GRADE LEVEL.

1. IBI CONTINUITY GROUP CHILDREN HAVE HIGHER MEAN SCORES IN BOTH SPANISH AND IN ENGLISH THAN COMPARISON GROUP CHILDREN, AT EVERY GRADE LEVEL.

2. THE IBI GROUP SUPERIORITY IS STATISTICALLY SIGNIFICANT IN ENGLISH VOCABULARY; IT IS NOT STATISTICALLY SIGNIFICANT IN SPANISH. IT INDICATES, HOWEVER, THE IBI CHILDREN HAVE MAINTAINED AND IMPROVED THEIR SPANISH AT THE SAME TIME THAT THEY HAVE GREATLY IMPROVED THEIR ENGLISH SKILLS.



*The superiority of this score over the comparison group of the same grade level is statistically significant beyond the .001 level.

Statistical detail is shown in Table 12 in the Technical Appendix.

FIGURE 11. MEAN RAW SCORES AND STANDARD SCORES ON MATH AND READING SUBTESTS OF THE WIDE RANGE ACHIEVEMENT TEST, FOR IBI CONTINUITY GROUP CHILDREN AND COMPARISON GROUP, BY GRADE LEVEL.

TO SUMMARIZE THE FINDINGS IN FIGURE 11:

1. AT EVERY GRADE LEVEL THE IBI CONTINUITY GROUP IS SUPERIOR IN BOTH MATH AND READING TO THE COMPARISON GROUP CHILDREN. IN EVERY CASE THE SUPERIORITY IS LARGE ENOUGH TO BE STATISTICALLY AND EDUCATIONALLY SIGNIFICANT.

2. BASED ON A STANDARD SCORES MEAN OF 100, WITH 90 TO 109 CONSIDERED AN AVERAGE RANGE OF SCORES IN TERMS OF NATIONAL NORMS, THE SCORES OF THE CONTINUITY GROUP ARE WITHIN THE NORMAL RANGE AT EVERY GRADE LEVEL FOR BOTH MATH AND READING. MATH SCORES IN THE EARLY GRADES ARE ABOVE THE NATIONAL MEAN.

3. THE MEAN STANDARD SCORE IN READING INCREASES WITH EACH GRADE LEVEL, ROUGHLY PARALLELING THE GAINS IN ENGLISH SKILLS REPORTED IN FIGURE 10.

IS THE EFFECT OF BILINGUAL INSTRUCTION DIFFERENT IN THE NORTH THAN IN THE TEXAS BORDER AREA?

The evaluator has bone beyond the original evaluation design to add this section to the evaluation report because she felt that data coming out of this project provide a "natural" experimental situation for looking at the effects of community factors and how they interact with programs of bilingual education. Most evidence of how bilingual programs function in different settings is hard to interpret because of differences in the type of instruction used in the two programs, differences in socioeconomic level of the two participants, differences in the qualifications of the teachers, etc. Most of these differences have been controlled with the IBI program, in that the programs in the north and the one in South Texas are as nearly as possible parallel programs: the same instructional approach, the same qualifications in the teaching staff, the same teacher training program, the same socioeconomic level for the participants.

There <u>are</u> marked differences in the northern and in the Texas sites in the relative support for the maintenance of Spanish or the acquisition of English. Some have commented that the most "successful" programs of bilingual education, such as the St. Lambert program in Canada, involve the learning of a second language (French) in a situation in which the children are in no danger of losing their first language (English) because it is the dominant, or the "economic" language of the community. A border community such as La Grulla is about the only section of the United States that approximates this situation: there is no danger of the children losing their Spanish in La Grulla because nearly all social interaction in the community, in their home and social life, takes place in Spanish. Spanish might also be considered the "economic" language of the community in that there are almost no jobs available except farm labor, and the crew bosses and others through whom these jobs are arranged are most likely to speak Spanish. Learning English in this setting becomes for the child an added skill, a school language useful in the classroom and a language that will be useful in other places and other pursuits, but is not reinforced much in the daily lives of the children.

For the children in the northern sites in Washington State, the situation is more typical of that found in the rest of the United States. Spanish is a minority language, used in few public settings. The "economic" language of

the community is English, since all better paying jobs depend on the acquisition of English. As soon as the Spanish speaking child moves beyond the home, his social contacts will increasingly depend on his ability to communicate in English. The family attitude is quite likely to be that to "get ahead" the child must learn English, so that home and community factors combine to stress the importance of English.

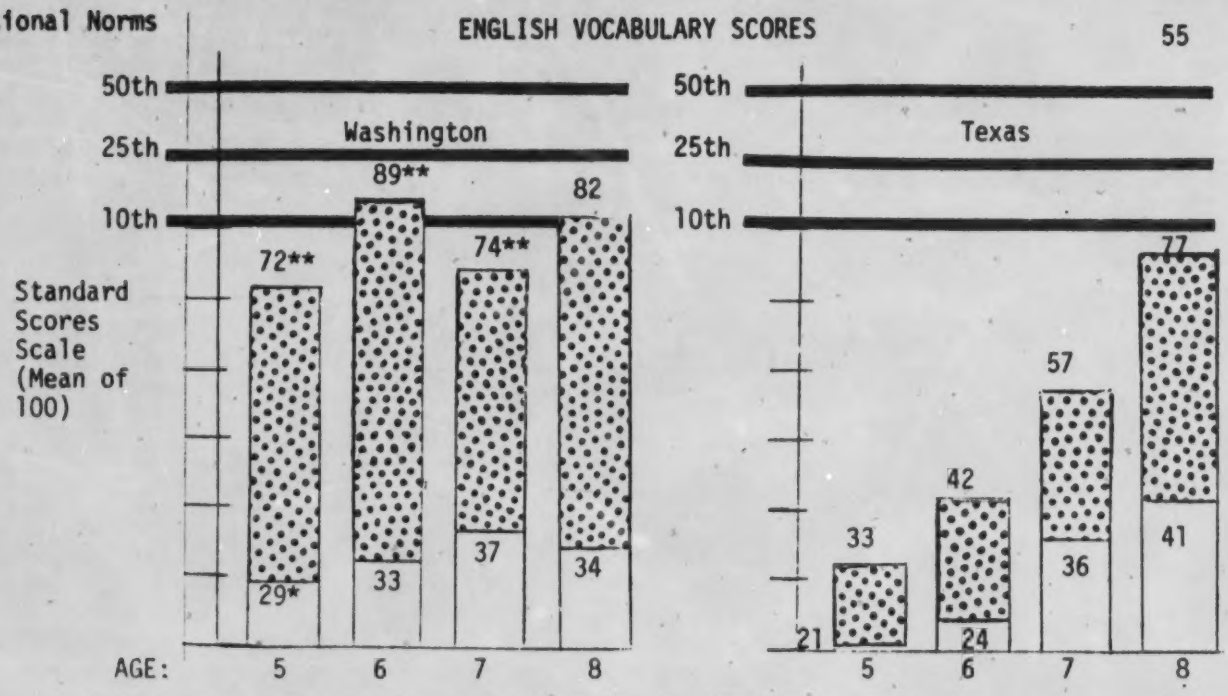
The child spends only a short period of every day in the school setting--an even shorter time in a supplemental program such as the IBI bilingual program for the school-age children. It would be unreasonable to feel that there is not a significant influence in children's academic progress related to the linguistic usage they encounter in the "rest" of their day, and in the attitudes toward language and the socioeconomic factors that influence these attitudes in the community in which they live.

The IBI program has now accumulated eight years of data on children receiving bilingual education in these two very different settings. Each time the child is tested, the comparative strength of English and Spanish is measured. On this basis it is possible to report that of the children who were originally Spanish dominant when they enrolled in the Washington State centers, 53% of those with 200+ days attendance now test higher in English than in Spanish, as compared to 9% of the children in the Texas program.

The educational program in both Texas and Washington has a structured curriculum to teach children both Spanish and English. Both English and Spanish are used in the teaching of other academic subjects. Neither program aimed to be more of a maintenance or a transitional bilingual program. Through the interaction of the program and community factors, however, the Texas program has turned out to be "maintenance" and the northern programs have become "transitional" bilingual.

The evaluator felt it would be useful to see if there was a different pattern of gains for Spanish dominant children depending on whether they were enrolled in the Washington program, or the Texas program. Accordingly the following four pages show a separate analysis of test scores, comparing the children enrolled in Washington and in Texas both in the norm group and after receiving 200+ days in the bilingual program. (Scores of children classified as English dominant have been excluded from this analysis.)

The evaluator has then drawn a number of conclusions about these data that relate to current issues of concern to policy makers in the field of bilingual education.



Shaded area = average scores of children in IBI program 200+ days.
White area = average scores of children in project norm group.

*This score is superior to the comparable score at the other site (same group, age level) at the .05 level of statistical significance.

**This score is superior to the comparable score at the other site (same group, age level) at the .01 level of statistical significance.

Detailed statistical analysis is given in Tables 14 and 15 in the Technical Appendix.

FIGURE 12. AVERAGE SCORES ON THE PEABODY PICTURE VOCABULARY TEST, FORM A, IN ENGLISH FOR THE PROJECT NORM GROUP AND IBI CHILDREN WITH 200+ DAYS ATTENDANCE, SEPARATELY PRESENTED BY PROGRAM LOCATION.

TO SUMMARIZE THE FINDINGS IN FIGURE 12:

1. IN BOTH LOCATIONS, CHILDREN RECEIVING THE IBI BILINGUAL PROGRAM HAVE LEARNED MUCH MORE ENGLISH THAN CHILDREN IN CONVENTIONAL CLASSROOMS, REPRESENTED BY THE NORM GROUP.

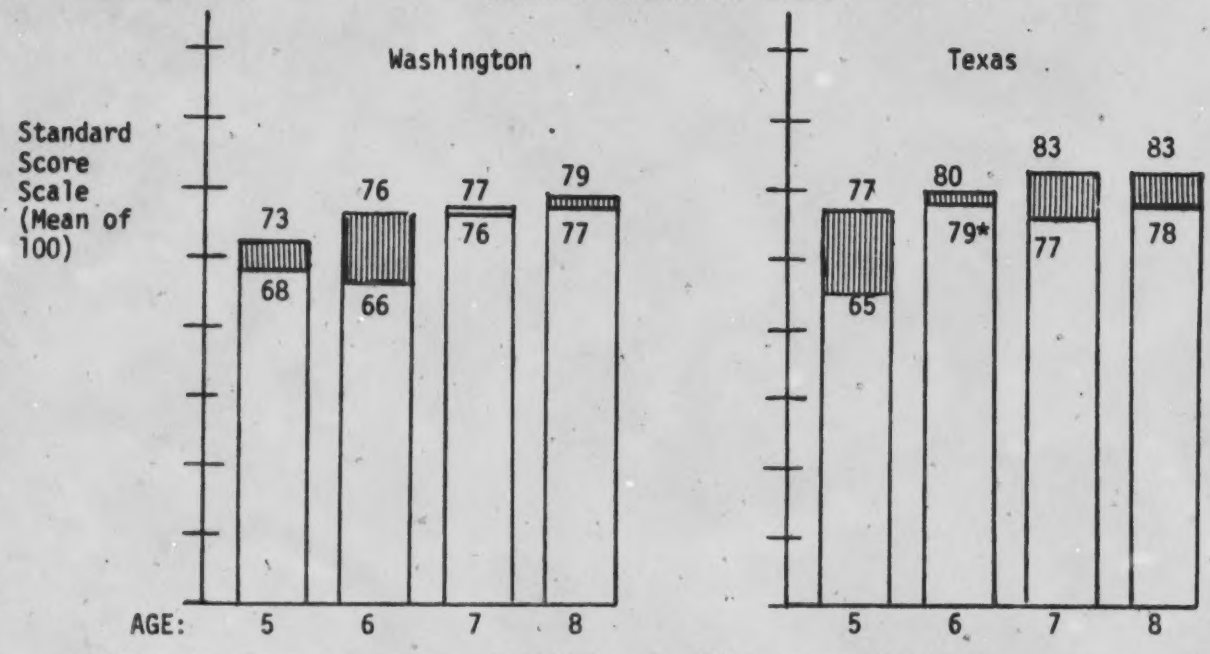
2. THE CUMULATIVE PRETEST SCORES (PROJECT NORM GROUP) SHOW A TREND TO HIGHER SCORES IN ENGLISH IN THE NORTHERN SITES, BUT THE DIFFERENCE IS STATISTICALLY SIGNIFICANT AT ONLY ONE AGE LEVEL.

3. AFTER 200+ DAYS IN THE IBI PROGRAM THERE IS A CONSISTENT PATTERN OF SUPERIORITY FOR CHILDREN IN THE NORTH, THAT IS STATISTICALLY SIGNIFICANT AT 3 OUT OF 4 AGE LEVELS.

4. ALTHOUGH GREATLY IMPROVED IN ENGLISH OVER THE CUMULATIVE PRETEST SCORES (NORM GROUP) THE IBI CHILDREN ARE STILL VERY LOW IN ENGLISH SKILLS COMPARED TO TEST NORMS BASED ON MONOLINGUAL ENGLISH SPEAKING CHILDREN.

Note: Figures 12 through 16 include test scores only for children classified initially as Spanish dominant.

SPANISH VOCABULARY SCORES



Shaded area = average scores of children in IBI program 200+ days.
White area = average scores of children in project norm group.

*This score is superior to the comparable score at the other site (same group, age level) at the .05 level of statistical significance.

Detailed statistical anslysis is given in Tables 14 and 15 in the Technical Appendix.

FIGURE 13. AVERAGE SCORES ON THE PEABODY PICTURE VOCABULARY TEST FORM B IN SPANISH FOR THE PROJECT NORM GROUP AND IBI CHILDREN WITH 200+ DAYS ATTENDANCE, SEPARATELY PRESENTED BY PROGRAM LOCATION.

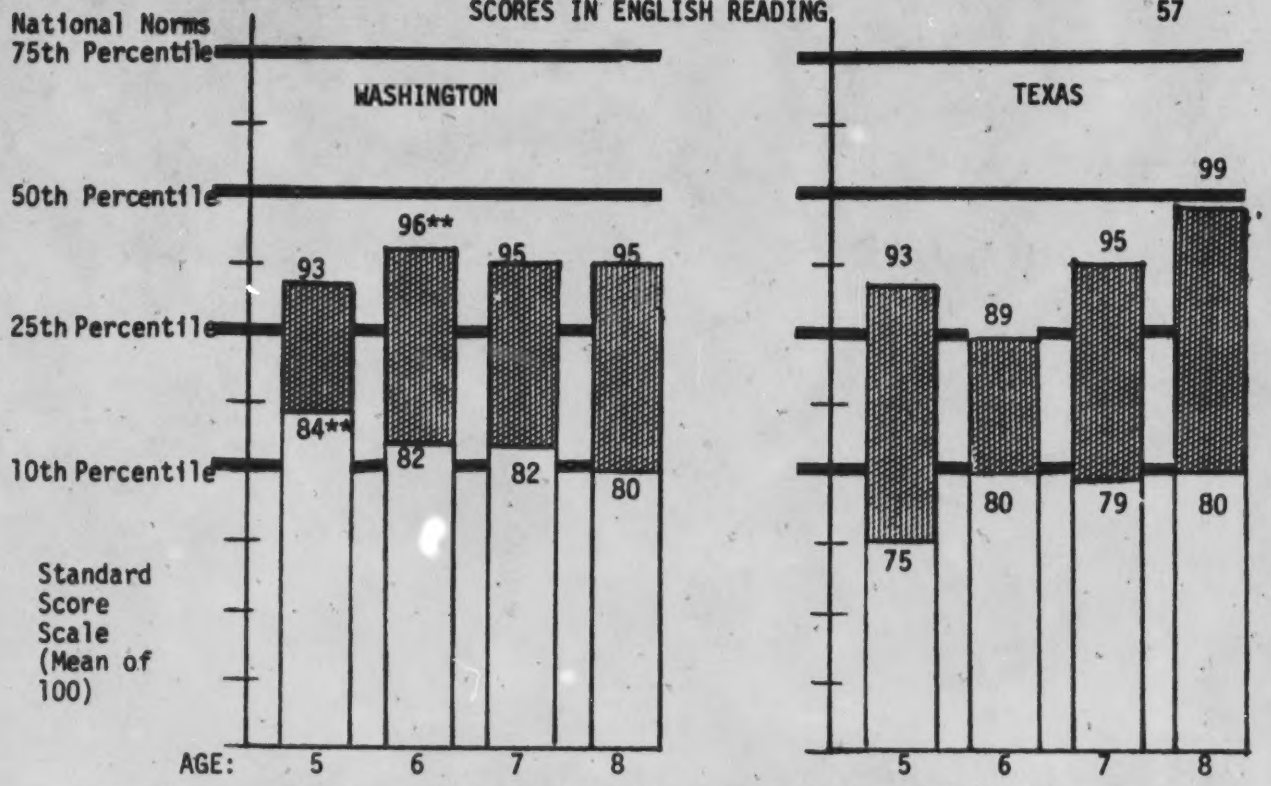
TO SUMMARIZE TH E FINDINGS IN FIGURE 13:

1. IN BOTH LOCATIONS, CH ILDREN RECEIVING THE IBI BILINGUAL PROGRAM SCORE SLIGHTLY HIGHER IN SPANISH VOCABULARY THAN CHILDREN IN CONVENTIONAL CLASSROOMS, REPRESENTED BY THE NORM GROUP (EXCEPT AT AGE 7 IN WASHINGTON WHERE IBI CHILDREN'S AVERAGE SCORE IN SPANISH IS ONE POINT LOWER THAN THE NORM GROUP AVERAGE).

2. NONE OF THE DIFFERENCES BETWEEN THE IBI CHILDREN'S SCORES AND THE NORM GROUP ARE STATISTICALLY SIGNIFICANT.

3. NONE OF THE DIFFERENCES FOR IBI CHILDREN WITH 200+ DAYS ATTENDANCE AT THE TWO LOCATIONS ARE STATISTICALLY SIGNIFICANT ALTHOUGH THERE IS A TREND TO HIGHER SCORES IN TEXAS.

4. THE DIFFERENCES BETWEEN WASHINGTON AND TEXAS IN THE PROJECT NORM GROUP ARE RANDOM, AND ONLY ONE AGE LEVEL SHOWS A STATISTICALLY SIGNIFICANT DIFFERENCE, FAVORING TEXAS. AT LEAST IN RECEPTIVE VOCABULARY, THE CHILDREN FROM SPANISH SPEAKING HOMES APPEAR TO HAVE ABOUT THE SAME FACILITY IN SPANISH DESPITE DIFFERENCES IN THE COMMUNITIES AND DIFFERENCES IN THE EDUCATIONAL PROGRAM (BILINGUAL OR CONVENTIONAL).



Shaded area = average scores of children in IBI program 200+ days.
White area = average scores of children in project norm group.

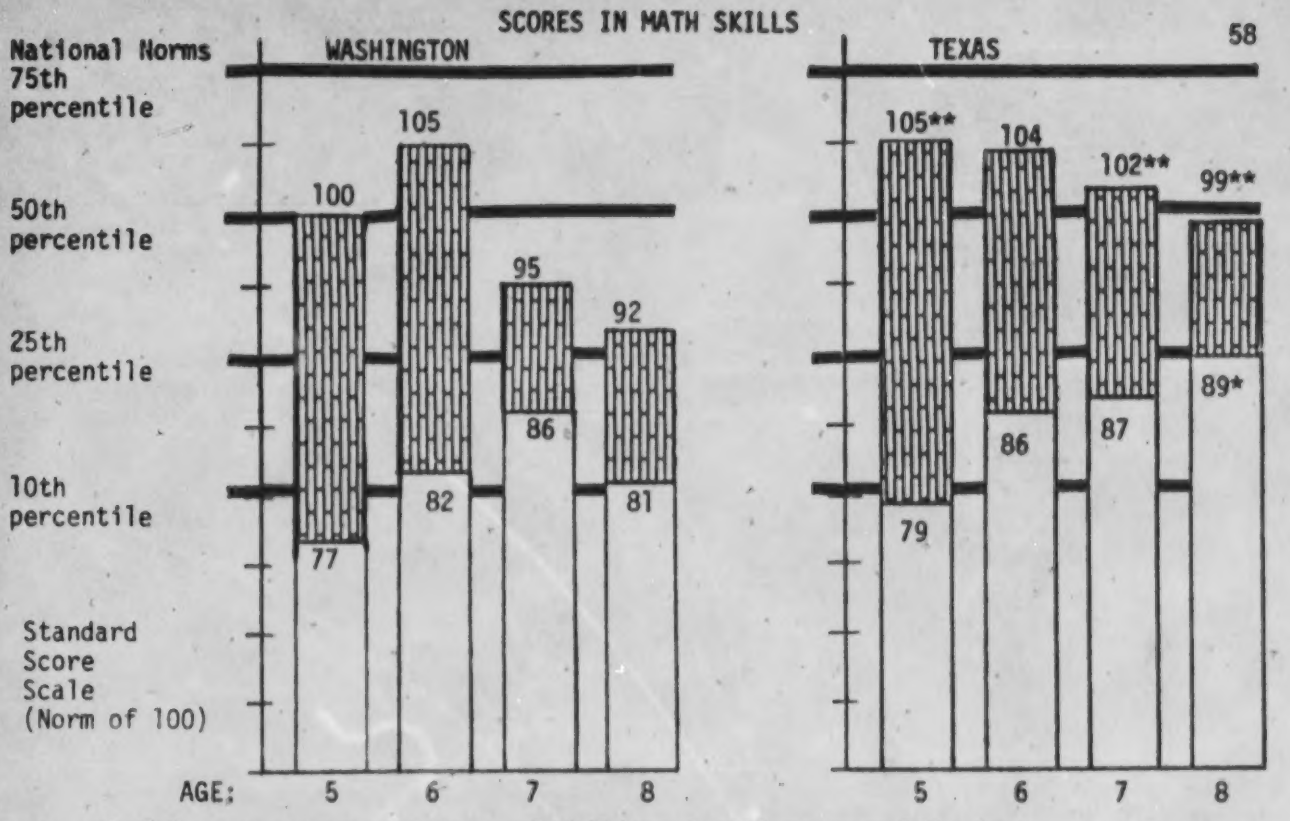
**This score is superior to the comparable score at the other site (same group, age level) at the .01 level of statistical significance.

Detailed statistical analysis is given in Tables 16 and 17 in the Technical Appendix.

FIGURE 14: AVERAGE SCORES ON THE WIDE RANGE ACHIEVEMENT TEST, READING SUBTEST FOR THE PROJECT NORM GROUP AND IBI CHILDREN WITH 200+ DAYS ATTENDANCE, SEPARATELY PRESENTED BY PROGRAM LOCATION.

TO SUMMARIZE THE FINDINGS IN FIGURE 14:

1. IN BOTH LOCATIONS, CHILDREN RECEIVING THE IBI BILINGUAL PROGRAM SCORE SIGNIFICANTLY HIGHER IN ENGLISH READING THAN CHILDREN IN CONVENTIONAL CLASSROOMS, REPRESENTED BY THE PROJECT NORM GROUP.
2. WITHOUT THE IBI PROGRAM (PROJECT NORM GROUP) THERE IS A TREND TO HIGHER SCORES IN THE NORTHERN PROGRAMS; THE DIFFERENCE IS STATISTICALLY SIGNIFICANT AT ONLY ONE AGE LEVEL.
3. PARTICIPATION IN THE IBI PROGRAM APPEARS TO HAVE EQUALIZED THE CHILDREN IN READING ABILITY AT THE TWO LOCATIONS: DIFFERENCES ARE SOMEWHAT RANDOM AND AT ONLY ONE AGE LEVEL IS THE DIFFERENCE STATISTICALLY SIGNIFICANT, AFTER 200+ DAYS ATTENDANCE.
4. WITH THE BILINGUAL PROGRAM CHILDREN ARE ACHIEVING READING SCORES IN THE NORMAL RANGE (BETWEEN 25TH AND 75TH PERCENTILE) BASED ON THE NATIONAL NORMS FOR THE TEST. WITHOUT BILINGUAL INSTRUCTION THE ENGLISH READING SCORES WERE EXTREMELY LOW; MOSTLY BELOW THE TENTH PERCENTILE (I.E., LESS THAN 10% OF THE CHILDREN IN THE NORMING SAMPLE ACHIEVED SCORES THIS LOW OR LOWER.)



Shaded area = average scores of children in IBI program 200+ days.
White area = average scores of children in project norm group.

*This score superior to the comparable score at the other site (same group, age level) at the .05 level of statistical significance.

**This score superior to the comparable score at the other site (same group, age level) at the .01 level of statistical significance.

Detailed statistical analysis is given in Tables 16 and 17 in the Technical Appendix.

FIGURE 15: AVERAGE SCORES ON THE WIDE RANGE ACHIEVEMENT TEST, MATH SUBTEST FOR THE PROJECT NORM GROUP AND IBI CHILDREN WITH 200+ DAYS ATTENDANCE, SEPARATELY PRESENTED BY PROGRAM LOCATION.

TO SUMMARIZE THE FINDINGS IN FIGURE 15:

1. IN BOTH LOCATIONS, CHILDREN RECEIVING THE IBI BILINGUAL PROGRAM SCORE SIGNIFICANTLY HIGHER IN MATH THAN CHILDREN IN CONVENTIONAL CLASSROOMS, REPRESENTED BY THE PROJECT NORM GROUP.
2. IN THE PROJECT NORM GROUP THERE IS A TREND TO HIGHER SCORES IN TEXAS, BUT THE DIFFERENCES ARE STATISTICALLY SIGNIFICANT AT ONLY ONE AGE LEVEL .
3. THE CHILDREN IN TEXAS PARTICIPATING IN THE IBI PROGRAM MAKE CONSISTENTLY HIGHER SCORES IN MATH, STATISTICALLY SIGNIFICANT AT 3 OUT OF 4 AGE LEVELS.
4. ALTHOUGH NOT QUITE AS LOW AS THE SCORES IN ENGLISH READING, CHILDREN IN CONVENTIONAL CLASSROOMS (REPRESENTED BY THE NORM GROUP) AVERAGE MATH SCORES IN THE LOWEST QUARTILE BY NATIONAL NORMS. WITH BILINGUAL INSTRUCTION THE CHILDREN ARE ABLE TO SHOW NORMAL PROGRESS, EVEN SLIGHTLY SUPERIOR MATH ACHIEVEMENT, COMPARED TO NATIONAL NORMS.

What conclusions can be drawn from this pattern of differences of scores in English and Spanish and in math and reading between the "transitional" northern community and the "maintenance" border Texas community served by the IBI programs?

This comparative analysis provides at least a partial answer to the question: Will children make faster academic progress if they are maintaining their primary language or making a transition to their second language? The test scores reported indicate that children at both locations are maintaining Spanish, but the children in the north are making the transition to English much faster. Supporters of transitional bilingual programs might make the assumption that faster gains in English would go hand in hand with faster gains in academic subjects. The comparative data from the IBI programs do not seem to support this. The children in Texas are making somewhat better academic progress than the ones in Washington State. Reading scores were about equal in the north and in Texas, ~~but the gain achieved was relatively greater for Texas~~ and there was a clear superiority in math achievement favoring Texas.

Another conclusion drawn from the comparative analysis is that there appears to be significantly faster gains made in English in communities where socioeconomic factors promote transition than in communities where these same factors support maintenance of Spanish. Since there is a much greater mix of language facility among children enrolling in the northern programs than in Texas, it means that Spanish speaking children will hear much more English. The teachers in the Washington centers also indicated more use of English at home than those in Texas, and most felt that they spoke English as well or better than Spanish which was not reported among teachers in Texas. This undoubtedly accounted substantially for differences in relative English gains, plus whatever language exposure the child encountered outside the classroom. Before one draws the conclusion that more exposure adds up to more progress in English, it should be noted that the children in the norm group in the north, whose educational progress reflected almost entirely English-only classrooms, did not make nearly the progress in learning English that children made in the IBI bilingual program. The structured teaching of English in the bilingual program, and the combination of use of the languages appears to have facilitated learning English much more than the conventional "immersion" classrooms experienced prior to entry to IBI.

Another conclusion drawn from this comparative analysis is that the child's development in the two languages appears to be somewhat independent. Children in the northern centers appear to maintain at least a receptive vocabulary in Spanish even in a "transitional" community, even though they have made very lage gains in English. This is contrary to the "balance effect" hypothesis, which projects a loss in primary language to balance the gain in the second language. Conversely, the children in Texas who did not gain as much English, did not show an offsetting large gain in Spanish--there may have been a ceiling effect with the test that was used and not a great deal of room for gain at either location.

In looking at the comparative data it is striking that the scores of children in the two locations are more alike than they are different; that in both cases they represent enormous gains over the expected achievement level as measured by the scores of the project norm group. This at least bears on the issue that has been raised as to the relative importance of an educational program, per se, in producing academic gains, and the importance of community attitudes, linguistic acceptance, and other socio-economic factors in affecting children's academic progress. The educational program itself appears to be primarily responsible for the gains children have made, and capable of producing similar results even when there are great differences in the status of the minority language in given communities.

The final conclusion bears on the comparative advantage of English "immersion," English as a second language (ESL), or bilingual education. Both language and academic scores were reported in the comparative analysis using standard scores--i.e., both were converted to a scale with a mean of 100 and a standard deviation of 15. Looking at the charts it is clear that the academic scores are much higher than the English scores. It would thus appear that given access to bilingual instruction, it is possible for children to keep up with academic skills showing normal progress, even while their English skills are very deficient. Had they been put into a program in which the concentration was solely upon improving English (ESL) with the children left to cope with academic instruction as best they could until their English was developed enough to enable them to use only English as a medium of instruction, the long period required to reach an acceptable level of English would have been a serious handicap. It would appear that bilingual instruction is much superior to putting children on "hold" in academic subjects until they can learn English.

Because the comparison group used in the IBI evaluation represents a collection of educational experiences, the evidence presented cannot be interpreted as clearly favoring bilingual over "immersion" English. However, the data from the northern site might be interpreted that way--the children who entered the IBI program in the north had no access to anything except "immersion English" in those communities unless they had encountered it in other states before moving to Washington. The IBI program also cannot be interpreted as representative of "bilingual" education--it is sequential, structured, well monitored, staff are given a great deal of training, it uses various classroom management techniques that have been associated with other non-bilingual successful educational programs. It can be said that given a well run bilingual program, children who are in most circumstances rock bottom low in academic and language skills are capable of making enormous progress. And it does seem important to add that this kind of result can be obtained utilizing a readily available teaching resource--bilingual adults from the same families as the children served.

PROCESS GOAL 1.10. TEACHERS WILL FOLLOW APPROPRIATE SCHEDULES.

IBI has a checklist to assure that each curriculum area is taught for at least the minimum time period, requiring child choice activity periods interspersed with sit-down lesson periods so they can be used to reinforce children to stay on task, etc.

The evaluator received documentation from approximately 50% of the teachers on approval of schedule. The training staff has monitored schedules closely so the goal was met, but some of the documentation is missing.

PROCESS GOAL 1.11. TEACHERS WILL USE APPROVED CURRICULUM.

IBI utilizes a weekly curriculum progress report form. On this teachers show the end of week placement of each child in each curriculum area. They also describe non-sequenced curricula such as cultural activities. From these reports it is possible to see that the program is being fully implemented at all sites, and children making steady progress. This goal was met.

PROCESS GOAL 1.12. TEACHERS WILL USE APPROVED TEACHING METHODS.

The IBI program has developed monitoring units for classroom management procedures, and for each curriculum area. After teachers have passed the initial training, the monitoring units are used to see that the teacher continues to demonstrate teaching skills required to be effective with the IBI methods.

Training records indicate that monitoring is being carried out at all sites. The goal is considered fully met for the Texas-Mobile sites, and partially met for the Washington State sites where there were gaps when no training was done because of staff changes and the time required for training a new supervising trainer in use of all training materials.

STAFF TRAINING COMPONENT

GOAL 2.1. TEACHERS WILL COMPLETE IN-SERVICE TRAINING.

THE IBI TRAINING PROCESS: In the early years of the IBI program some systematic variations in training methods were tried. One of these compared teacher effectiveness for teachers who had an extended period of pre-service training during which time they did not have primary responsibility for a group of children, and for other teachers who had an assigned group from the first week of employment. The in-service training model was more effective--the teachers seemed quicker to pick up teaching skills when they had primary responsibility for a group of children. The early training also used variations of "generalized" training--i.e., skills such as how to get children to ask questions or make longer responses that might apply across several subject areas, as opposed to very focused training specific to a given curriculum. An example of focused training would be showing teachers how to give specific feedback when they are marking children's handwriting work papers so they can be sure the child knows what he has done right or wrong. Again, it was found that the focused training specific to each curriculum area was much more effective.

As a result IBI uses in-service training, very specific to the curriculum materials. A five-step training process is used. The first step begins with the trainer demonstrating the teaching skills (demonstrations proved a much quicker method to train than discussions about what to do). The next step is a "pre-observation" in which the teacher is working with a group of children and the trainer watches (without taking notes) and steps in and models how to do it if there is something the teacher doesn't understand how to do. ~~The next formal~~ third in the training process step is a scheduled observation in which the trainer writes down actual interactions between teachers and children, following an observation form that covers all the essential teaching skills in that subject area. After an observation the trainer goes over the record with the teacher and makes suggestions. When two or more observations have been completed, a checklist is filled out indicating if each teaching skill can be consistently demonstrated by the teacher. Going over this with the

teacher serves as a summary and review of the training unit. The checklist has a criteria for passage of the training unit (a percentage of skills that must be marked plus for "consistently demonstrates," and some skills that are considered mandatory for successful teaching of that particular subject). The final (fifth) step in the training process is going back after three or four months with a monitoring unit to record what teachers are doing and see if the essential skills are still being carried out by the teaching staff.

PROJECT RESULTS: Training records submitted to the evaluator indicate that the inservice training program was carried out as designed, meeting all goals, for the Texas site. The training fell short of the project goals for both Washington sites, although 70% of the teachers had training; not, however, the targeted number of training unit completions. The reason for this shortfall was partly owing to staff turnover, and the time it takes to train a new supervising trainer to a level of competency on all IBI training materials.

GOAL 2.2. STAFF WILL RECEIVE CONTINUED ACADEMIC TRAINING.

THE IBI ACADEMIC TRAINING PROGRAM: In the IBI program the Project Manager and Educational Director are responsible for arranging appropriate continuing education opportunities for staff. This includes coaching to help them pass the G.E.D. if they did not have this background when they entered the program, and college education opportunities. Continuing academic opportunities are also arranged for parents of children if they express interest and are able to attend.

PROJECT RESULTS: No continuing academic training was reported for Texas staff. Three teachers completed their G.E.D. training and one teacher was enrolled for college credit at one Washington State program; five teachers took workshops for college credit at the other Washington State center. One parent of a handicapped child was helped to enroll in a special program dealing with education of handicapped children.

This goal would be considered partially met. A far more extensive academic program involving nearly all staff that had been carried out in earlier years was discontinued because of a policy decision at the

college where the program was handled. The IBI program staff has not been able to line up a full-scale college training program since that time.

GOAL 2.3. TRAINING STAFF WILL RECEIVE TRAINING.

THE IBI TRAINER TRAINING PROGRAM: The IBI program has worked out a very thorough trainer training program. It covers all the skills that must be demonstrated in reference to the programs teacher training; it also covers the rationale behind the teaching strategies. From this trainers have both the theoretical and the practical aspects of the program available to them. There are quizzes with a criteria for passing to check the background knowledge. There are also demonstration observation forms which require the trainer to demonstrate the skills, again meeting a criteriion level. Trainers are also checked on their skills in doing observations, giving feedback and conferencing teachers.

PROJECT RESULTS: One new trainer was employed during the 1978-79 program year. She was trained using the appropriate training materials, and passed all aspects of the training checklists, meeting criteria.

GOAL 2.4. STAFF WILL ARRANGE TRAINING OPPORTUNITIES.

The project provided in-service training opportunities at all sites. In order to fill in at one site until the new trainer could become able to carry out training responsibilities, a number of staff from other locations provided interim training services. Some academic training opportunities were developed; quite a bit short of the extensive academic training program that was carried out in the past.

PARENT AND COMMUNITY INVOLVEMENT COMPONENT

GOAL 3.1. FAMILIES AND COMMUNITY MEMBERS WILL PARTICIPATE IN PROGRAM MANAGEMENT.

PARENT AND COMMUNITY INVOLVEMENT IN THE IBI PROGRAM: In order to assure that the program operations best meet the needs of the participants, and that the resources of the community are integrated into program, each community in which the IBI program operates has an organized parent/community advisory council.

In the two Washington State sites, all parents of children enrolled in the program are members. They, in turn, elect officers as well as official representatives of the community. Each group has written bylaws and meets approximately monthly throughout the year.

In Texas the parents' group chose to incorporate. Instead of officers they elect a five-member board made up of parents and members of the community, with the project educational director serving as its exeuctive officer. During the mobile phase, when La Grulla residents have mostly moved north to various locations doing seasonal farm work, if official business needs to be taken up, the educational director and/or site coordinator for the Texas site contacts board members by telephone, and business is conducted in this manner.

In addition to the five-member board, however, the Texas site holds general meetings of parents in order to discuss center operations, proposals, etc. During the northern phase when mobile centers are operating at temporary sites, the site-coordinator may hold a series of meetings at the labor camps or at the preschool centers where IBI children are served.

In order for parents to have information on the project from which to make decisions all staff report to the parent groups. Each published evaluation is submitted to parent/community advisory groups for review. The trainer and some teachers as well as the site coordinator usually attend all meetings to report on how the program is doing. Usually once or twice during the year some teachers will do a curriculum demonstration for the parents, and sometimes videotaped lessons are shown. The project manager is responsible for submitting outlines of plans

that would go into proposals for advisory group discussion and review prior to submission of any funding proposal.

Parents in the IBI program have more than an advisory relationship to the program. A personnel committee of parents and staff screens and recommends teachers, cooks and other support personnel to be hired. Although the board of the administering school district has the final authority on hiring, the local screening committee's personnel recommendations have always been honored so that in fact the parent committee has a primary role in hiring. In addition the parent groups have been able to earn substantial funds (several thousand dollars over the years) through voucher payment for volunteer services and various fund raising projects. They have sole authority over use of the parents' funds. A number of different projects have been developed for the benefit of members using parent funds.

PROJECT RESULTS: The project goal in regards to the parent/community advisory group was that they would participate in actual decision making in at least four out of five specified areas. Minutes received by the evaluator document 11 meetings by the Moses Lake group, 10 at Connell and 7 for the Texas program. A content analysis is shown on the pages which follow, documenting types of parent decision making. This meets the project goal.

CONTENT ANALYSIS OF ADVISORY COMMITTEE MEETINGS

MOSES LAKE	CONNELL	
(a) Organizational matters (e.g., setting meeting times, voting for officers, planning parent activities)		
2/79 Elect parents to represent program at National Bil. Ed. Ass'n meetings 3/79 Resignation of secretary: discuss holding of election.	7/78 Planning for parents project fence, yard, equip. for center. 5/79 Discuss parents helping with home contacts: set up committee, choose person to help.	10/78 Recommendations re Board members 3/79 Approve new member of Board
(b) Review and input into funding proposals		
5/79 Discuss letter outlining program planned for next proposal--suggestions solicited.	5/79 Minutes include several quotes from parents of reactions to program; discuss plans outlined for new proposals.	3/79 Discuss new proposal, approve same program. Also authorize staff to help other schools get started "so other children can have bilingual education who need it."
(c) Interviewing and selection of teaching staff as well as other personnel actions		
10/16/78 Committee interviewed four teacher candidates; selected two. 10/23/78 Committee interviewed one teacher candidate; hired same.	5/79 Solicit suggestions from parents for people who could fill CETA slots to teach at center.	
(d) Decisions regarding use of parent funds		
7/78 Vote to ask for monthly donation from parents for parents fund 8/78 Authorize use of fund to take kids to fair	7/78 Vote on ways of earning additional funds for projects 8/78 Vote to use funds for fence, grass seed, garbage racks	11/78 Vote to use parent funds for construction needed to meet licensing requirements

MOSES LAKE	CONNELL	GRULLA-MOBILE
9/78 Vote to use funds for mural, windows, aprons, bags, sheets	9/78 Discuss other needs; emergencies, various equipment	
12/78 Vote to use funds for Xmas presents	1/79 Agree to purchase kitchen equipment	
2/79 Change amount of donation asked		
3/79 Vote to pay for kitchen equipment		

(e) Discussion of hours of operation, curriculum and other aspects of educational program

10/78 Discuss need to notify bus driver	9/78 Discuss hours, schedule, need to have children by 8:30.	9/78 Discuss center operations, how staff is disseminating program helping other sites. Discuss schedule, having kids picked up at center.
9/78 Planning related to cultural program: Halloween, Thanksgiving, program and plans, make assignments.	10/78 Discuss program at center--parents appreciation for same--how parents and teachers both contribute to child	11/78 Discuss how program will be affected by higher ratio of kids for each teacher.
11/78 Plans re Xmas program	11/78 Plan cultural activity; Posada.	4/79 Discuss curriculum and testing program.
5/79 Teacher demonstrates Spanish and English DISTAR, discussion on curriculum.		6/79 Seek input on teaching methods and curriculum, results of survey reported.

GOAL 3.2. PARENTS PARTICIPATE IN PROGRAM EVALUATION.

MECHANISM FOR PARENT EVALUATION OF IBI PROGRAM: Each parent/community advisory committee asks for volunteers or appoints a committee of parents to review program operations each year. These parents are given a special briefing by staff so they will be familiar with each curriculum area and the teaching methods the program is trying to implement. They then spend most of a day observing classes and completing a program evaluation form developed for this purpose. The forms are mailed to the project evaluator, and the parents report back to the parent/community group as a trigger to further discussion of program operations.

In recent years the Texas staff has tried to have the majority of parents do these evaluations (rather than a small committee). They come to the center in small groups.)

PROJECT RESULTS: There are written parent evaluations plus some letters from parents from all three sites indicating this goal was met. There are repeated references in minutes (taken from all three sites) dealing with group evaluation of the program, likes and dislikes and suggestions.

PROCESS GOAL 3.3. STAFF WILL REPORT TO ADVISORY GROUPS.

The attendance reported in the minutes indicates that staff members attended advisory meetings regularly, had reports on program operations for the parents, sought input from parents and community members. The project manager prepared proposal outlines which were discussed at advisory meetings and prior approval obtained for all proposal submissions. Letters from the parent/community advisory group president or chairman indicate receipt and review of the projects evaluation. In summary, the IBI program has been carried out with the parent advisory groups in active partnership with program staff.

SUMMARY

The IBI instructional goals were that project children, after 200 or more days attendance, would show superiority to the project norm group or comparison group that was statistically significant at least at the .05 level.

The exact wording of other project goals can be obtained by reference to the program evaluation plan. The summary below indicates the status of goal attainment as reviewed in this evaluation.

INSTRUCTION	
1.1 Preschool Concepts	Goal met
1.2 Handwriting	Goal met
1.3 Spanish Vocabulary	Goal met, except n.s.* at age 6
1.4 English Vocabulary	Goal met
1.5 Math	Goal met
1.6 Reading in English	Goal met
1.7 Reading in Spanish	Goal met
1.8 Cultural Concepts	Goal met
1.9 Continuity exceed comparison children, math and reading	Goal met
INSTRUCTION PROCESS GOAL	
1.10 Maintain appropriate schedules	Met, but documentation incomplete
1.11 Use of approved curriculum	Goal met
1.12 Use of approved teaching methods	Goal met in Texas, partially met in Washington
STAFF DEVELOPMENT	
2.1 In-service training schedule maintained	Met in Texas, not in Washington
2.2 Continue Academic Training	Partially met
2.3 Trainers trained	Goal met
STAFF DEVELOPMENT PROCESS GOAL	
2.4 Provide in-service and academic training opportunities	Goal partially met
PARENT AND COMMUNITY INVOLVEMENT	
3.1 Advisory groups do decision making	Goal met
3.2 Advisory groups do program evaluation	Goal met
PARENT AND COMMUNITY PROCESS GOAL	
3.3 Staff reports to advisory groups	Goal met

*n.s. = not statistically significant

TECHNICAL APPENDIX A

The main body of the final report was written for the general reader, and for clarity avoided technical detail. Since information on procedures for testing and data collection and explanatory footnotes for the analysis of test scores in the instructional component is of importance to a technical reader, that information has been reported here.

TESTING AND DATA COLLECTION AND ANALYSIS PROCEDURES

Training of Testing Personnel

Independent testers are used at each site--e.g., instructional or supervisory staff do not do testing. All testers are paraprofessional bilingual Mexican-Americans. Since more than 95% of the children served are Mexican-American, this testing staff has cultural identity for the overwhelming majority of children being tested.

Each tester is individually trained on each instrument and must demonstrate appropriate procedures in the testing of at least two children, under observation, as part of the training. Subsequent monitoring visits review testing procedures annually. Training and monitoring of testers is done by the evaluator and/or the resource trainer. Experienced testers are also used to assist in training new testers.

Testing Schedule

All children are pretested before attending the program for 30 days--in practice as soon as possible after their initial enrollment. This pretesting includes all of the instruments used in the evaluation appropriate to children of their age. It also includes the project achievement tests which are used to help determine initial placement of children in project materials. The IBI program serves children continuously over the 12 months of the year. Since new children can and do enroll in the program every month during the year, pretests are also given during every month throughout the year.

Repeat testing on standardized test instruments is done after an individual child has attended for a period of 100 days, i.e., the child is tested at 100, 200, 300, etc. days. Attendance data are kept individually for each child and at the end of each month a list is made of every child who that month passed a testing interval in his attendance. This list is forwarded to the tester at each site who then administers the appropriate tests for that child. Every month some children at each center reach a testing point in their program attendance, so posttests are also given during every month throughout the year.

This testing schedule is more complicated than the usual evaluation procedure of doing mass testing at two calendar points. It was devised because of the unique requirements of evaluating a migrant population who have spotty attendance and who come and go at different times during the year. When the

Texas Education Agency reports on child progress between tests administered in October and other tests administered in April of the school year it is not uncommon to have both pre- and posttests on less than 50% of the children enrolled in the program. Some children are there for pretests but leave before posttests are given. Other children come too late for pretests but are there at the posttesting dates. Some children enter late and leave early and aren't there for either testing point. This is a very common pattern in the evaluation of migrant programs--test information presented that represents a very unsatisfactory percentage of the project group it is meant to evaluate.

Another problem encountered in use of calendar date testing with a migrant population results from their uneven attendance patterns. Of two children tested on the same date in April, it would not be at all uncommon for one to have attended 50 days total prior to that testing point, another child to have attended 90 days. This puts the evaluator in the position of comparing child progress between tests which represent two very different amounts of exposure to the program being evaluated.

By testing based on individual attendance records, each of the posttests used in this evaluation represent a known amount of project intervention. At evaluation points the accumulated tests are then subgrouped by age and the period of attendance at the time of testing for purposes of analysis.

Selection of Tests

The IBI program selected the Peabody Picture Vocabulary Test, The Cooperative Preschool Inventory, and the Wide Range Achievement Test in part because these nationally standardized test instruments were among those most widely used by USOE in educational research and evaluation. The Cooperative Preschool Inventory was specifically developed for a measurement of the effects of Head Start programs and was utilized in many evaluative efforts measuring the impact of this nation-wide program of preschool education. The Peabody Picture Vocabulary Test similarly has been widely used in research on preschool programs. The Wide Range Achievement Test was one of two standardized achievement tests utilized in the massive Follow Through studies.

The Prueba de Lectura was selected as the test of Spanish reading because there is adequate information as to validity and reliability for it, and it appears to be among the most widely used Spanish language test series among U. S. bilingual programs. There are norms now published for this test. These were not used because they are tied to fall or spring testing, and the testing of Spanish reading in the IBI program is done mid-winter (too many children would be in the process of migration for testing at the times recommended). The other tests used do not gear their norms to a specified calendar date schedule of testing.

In order to use the WRAT and PPVT, it was necessary to translate sections into Spanish. Tests are individually administered in the IBI program because of attendance cycle testing--this affects the math portion of the WRAT which was standardized under group administration. None of the tests was normed with a group even close to the IBI composition as to ethnicity or language use. For all of these reasons, the basic evaluation design has been kept internal to the project. The goals are all stated in terms of the project norm group, which is matched by ethnicity and language use to the project attendance groups. The language and circumstances for test administration are held constant in the testing of these two groups--indeed the testers are the same. The references,

where made, to national norms are added so that there is some external interpretive power to the data. But all of these reservations about the application of the national norms restricts the interpretation of the data. However, this would be true of any bilingual program.

Analysis Procedures

The project norm group is used as a measure of the probable achievement level of project children without benefit of the program. When a child enrolls in the program he is pretested. If the pretest was given before the child had attended the program for as long as 30 days, it is put into the project norm group for children at that age level. The project has an enrollment policy which permits children to start the program at different ages, e.g., some start when they are three, others when they are four, others at five, or six. By accumulating pretests the project has been able to develop its norm group for all ages on all tests. The size of the norm group is increasing constantly as new pretests are accumulated.

In the past all evaluations have used a norm group obtained as described in the previous paragraph. As of 1977, the norm group for the Peabody Picture Vocabulary Test and for Wide Range Achievement Test was expanded to include the tests of children from a neighboring town to La Grulla, Texas. These children had been tested for the previous three years to provide a comparison group of mobile migrant children to compare to the children in just our mobile component using the two tests mentioned, the PPVT and WRAT. The reason for testing a comparison group instead of just using the project norm group for this special study (see instructional goal nine) is that the project norm group includes pretest scores on some children from permanent sites who do not migrate. In the special study we wanted to hold the factor of migration constant: only project children who migrated were tested, only comparison group children who migrated were tested.

The community where comparison group tests were given and La Grulla have about the same socioeconomic level--most families earn their yearly income from the migration period doing seasonal farm work. Both communities are Spanish dominant, located on the Rio Grande River where television stations beam in Spanish, the usual language of casual conversation in town or school would be Spanish. As a further check on the comparability of the two population groups, statistical analysis was done for two years in a row comparing the mean test scores by grade level of the comparison group and the pretest scores of children at the same level in the project norm group. No significant differences were found. This was interpreted to mean that the children from the neighboring town were, in fact, the same population group as project children and their scores are like those of the children pretested for this program.

Most pretest scores for children in this project were at lower age levels (three, four, five) since the project attempts to get children started as young as possible. Therefore, the addition of scores from the comparison group to the project norm group enlarged the size of the norm group at the school age level where it has been the smallest. Having a larger norm group at these upper ages allows greater stability for statistical analysis.

The project evaluation design calls for comparison of the mean scores of project children posttested after 100 or 200 days to children in the project norm group of the same age. A t-test of statistical significance is run between the project posttest attendance groups and the project norm group of the same age. Statistical analysis is only done when subgroups to be compared have a minimum size of ten.

For this evaluation all test data were put onto computer cards and the t-test analysis was done using the SPSS computer package. The readout using this computer analysis gives the t-value using separate or pooled variances. If a significant difference existed in the two variances the separate variance t was reported; if the two variances were not significantly different the pooled variance t was reported in the tables of detailed project findings which follows in this technical appendix.

Most objectives are based on comparison of the children with over 200 days attendance and the project norm group. Because it is difficult for a child to accumulate 200 days of attendance all at the same age level, there is almost complete independence of the two groups used in the analysis. Children with 200 days at age four will more than likely have started the program at age three, for example. They will be compared to the pretest scores of other project children who started the program at age four.

A very small percentage of the children have both pretest and posttest scores at the same age level. Analysis was therefore done including and excluding this small overlap group. The conclusion was that any bias created by this lack of complete independence of groups acted against the project in reducing the likelihood of a finding of significance.

The test analysis tables report long term program effect through the cumulative analysis, e.g., all tests through April 1979 which was used as the cut-off date for this evaluation. The current year program data would be post-tests given in the period since the last analysis, e.g., May, 1978 through April, 1979. The cumulative norm group is used for tests of significance of difference between means for both long term cumulative and current year analysis groups. The t-value reported in each table is between the posttest attendance group, and the project norm group of the same age category.

To maintain a high level of accuracy in handling of test data the following precautions are taken. Each tester scores tests she administers. All tests are checked and rescored upon receipt. After preparation of the computer cards a readout is obtained and two persons recheck the accuracy before the decks are used. After analysis has been done, the N's of subgroups are rechecked against the project data entry records.

The project has employed independent evaluation specialists who have reexamined all analysis procedures and validated claims. The evaluation division of Northwest Educational Research Laboratories in Portland performed this evaluation review and audit through 1974 and Technical Assistance Services of Seattle through 1978.

TABLE 2. Distribution by Percentile Score in English Vocabulary of Children Enrolled in the IBI Program through 4/79, by Classified Language Dominance at Program Entry.

Dominance Group	Below 25th percentile	25th to 75th percentile	Above 75th percentile
English Dominant	140 (18%)	43 (5%)	11 (.1%)
Spanish Dominant	576 (75%)	3 (--%)	0 (--%)

NOTES:
Percents are based on total of both English and Spanish Dominant children.

English Dominant means child received higher score in English vocabulary than in Spanish vocabulary on pretest.

Spanish Dominant means child received higher score in Spanish vocabulary than in English vocabulary on pretest.

Test used in Peabody Picture Vocabulary Test, Form A in Englih, and Form B in Spanish using a project translation.

Out of the children listed as "below 25th percentile" 61 of the English dominant children, and 538 of the Spanish dominant children, has a percentile score of zero; i.e., 77% of the total enrollee group scored zero percentile.

STATISTICAL DETAIL OF TEST ANALYSIS FOR INSTRUCTIONAL COMPONENT

1.1 PRESCHOOL CONCEPTS

TABLE 3. Cooperative Preschool Inventory Test Scores
Cumulative Analysis

Age and Attendance	Number	Mean	St. Dev.	(w/norm) t-value	2-tail prob.	Nat'l Percentile
Age 3.0-3.11						
IBI norm	228	18.877	7.706	-	-	30th
100 days	91	24.593	7.079	6.12	0.000	53rd
200+ days	17	29.941	6.189	5.78	0.000	69th
Age 4.0-4.11						
IBI norm	142	30.127	10.551	-	-	35th
100 days	178	33.736	8.447	3.32	0.001	50th
200+ days	197	39.152	8.930	8.28	0.000	67th
Age 5.0-5.5						
IBI norm	39	38.205	9.285	-	-	48th
100 days	49	43.674	10.059	2.62	0.010	69th
200+ days	153	47.320	7.845	6.23	0.000	78th
Current Year Analysis						
Age 3.0-3.11						
100 days	16	24.375	5.136	2.81	0.005	48th
200+ days	0	(too few for analysis)				
Age 4.0-4.11						
100 days	27	31.630	8.134	0.70	0.484	41st
200+ days	38	38.079	9.304	4.23	0.000	63rd
Age 5.0-5.5						
100 days	3	(too few for analysis)				
200+ days	31	47.774	9.895	4.16	0.000	82rd

NOTES ON ANALYSIS:
Cumulative Analysis includes all test 1973 through 4/79.
Current Year Analysis includes tests given between 5/78 and 4/79.
The t-value compares the means of the posttest attendance groups to the IBI norm group in the cumulative analysis.
Age 4.0-4.11 percentiles based on national norm for 4.6-4.11 age group.

1.2 HANDWRITING

TABLE 4. Wide Range Achievement Test, Spelling Subtest Scores

Cumulative Analysis

Age and Attendance	Number	Mean	St. Dev.	t-value	2-tail prob.
Age 3.0-3.11					
IBI norm	215	0.795	1.255	-	-
100 days	91	2.495	1.980	7.57	0.000
200+ days	12	4.417	2.906	4.29	0.001
Age 4.0-4.11					
IBI norm	151	2.980	2.979	-	-
100 days	184	5.772	3.996	7.32	0.000
200+ days	163	9.215	5.044	13.45	0.000
Age 5.0-5.11					
IBI norm	112	7.866	4.752	-	-
100 days	103	11.379	5.151	5.20	0.000
200+ days	237	15.321	4.372	14.46	0.000

Current Year Analysis

Age 3.0-3.11					
100 days	19	2.211	2.250	4.35	0.000
200+ days	0	(too few for analysis)			
Age 4.0-4.11					
100 days	30	5.133	3.560	3.10	0.004
200+ days	36	9.250	4.747	7.58	0.000
Age 5.0-5.11					
100 days	8	(too few for analysis)			
200+ days	62	15.936	4.804	10.65	0.000

NOTES ON ANALYSIS:
Cumulative Analysis includes all tests 1973 through 4/79.
Current Year Analysis includes all tests given 5/78 through 4/79.
The t-value compares the means of the posttest attendance group to the IBI norm in the cumulative analysis.

1.3 SPANISH VOCABULARY

TABLE 5. Peabody Picture Vocabulary Test Scores, Form B in Spanish

Children Whose Primary Language is Spanish

Age and Attendance	Number	Mean	St. Dev.	t-value*	2-tail Prob.
Age 3.0-3.11					
IBI norm	253	19.403	8.231	-	-
100 days	97	25.402	8.820	5.98	0.000
200+ days	15	28.267	6.984	4.08	0.000
Age 4.0-4.11					
IBI norm	149	28.262	8.999	-	-
100 days	173	30.960	8.796	2.72	0.007
200+ days	169	34.018	8.422	5.89	0.000
Age 5.0-5.11					
IBI norm	106	36.821	9.271	-	-
100 days	84	40.869	8.851	3.05	0.003
200+ days	232	40.651	7.657	3.71	0.000
Age 6.0-6.11					
IBI norm	70	46.714	9.948	-	-
100 days	32	43.063	9.398	-1.75	0.083
200+ days	130	46.531	7.999	-0.13	0.894

Children Whose Primary Language is English

Age 3.0-3.11					
IBI norm	57	6.211	6.307	-	-
100 days	33	10.546	6.965	3.02	0.003
200+ days	5	(too few for analysis)			
Age 4.0-4.11					
IBI norm	62	8.032	10.034	-	-
100 days	46	14.696	11.654	3.18	0.002
200+ days	50	14.240	9.397	3.35	0.001
Age 5.0-5.11					
IBI norm	31	12.936	12.299	-	-
100 days	34	14.765	14.494	0.55	0.587
200+ days	69	19.188	12.589	2.31	0.023
Age 6.0-6.11					
IBI norm	14	18.214	17.232	-	-
100 days	14	25.786	19.071	1.10	0.280
200+ days	28	25.000	16.488	1.24	0.223

*The t-value compares the means of the posttest attendance groups to the project norm group of the same age and language classification.

1.4 ENGLISH VOCABULARY

TABLE 6. Peabody Picture Vocabulary Test Scores in English, Form A

Cumulative Analysis

Test Group: Children Whose Primary Language is Spanish

Age and Attendance	Number	Mean	St. Dev.	t-value	2-tail Prob.
Age 3.0-3.11					
IBI norm	253	6.241	4.059	-	-
100 days	97	10.814	6.128	6.80	0.000
200+ days	15	16.267	8.598	4.49	0.001
Age 4.0-4.11					
IBI norm	149	9.859	7.012	-	-
100 days	173	13.832	8.024	4.69	0.000
200+ days	169	20.485	12.457	9.51	0.000
Age 5.0-5.11					
IBI norm	106	12.821	9.949	-	-
100 days	84	20.107	13.276	4.18	0.000
200+ days	232	27.461	15.361	10.48	0.000
Age 6.0-6.11					
IBI norm	70	18.371	12.368	-	-
100 days	32	29.469	14.395	3.99	0.000
200+ days	130	37.169	15.251	9.43	0.000
Age 7.0-7.11					
IBI norm	69	27.420	15.830	-	-
100 days	7	(too few for analysis)			
200+ days	66	41.818	13.177	5.73	0.000
Age 8.0-8.11					
IBI norm	48	33.417	16.450	-	-
100 days	3	(too few for analysis)			
200+ days	43	54.419	11.576	7.10	0.000
Age 9.0-9.11					
IBI norm	54	35.611	16.476	-	-
100 days	6	(too few for analysis)			
200+ days	18	59.000	8.792	7.66	0.000

Current Year Analysis*

Age 3.0-3.11					
IBI norm	253	6.241	4.059	-	-
100 days	17	10.412	3.589	4.13	0.000
200+ days	0	(too few for analysis)			

TABLE 6. (continued)

Age and Attendance	Number	Mean	St. Dev.	t-value	2-tail Prob.
Age 4.0-4.11					
IBI norm	149	9.859	7.012	-	-
100 days	27	11.037	6.959	0.80	0.422
200+ days	36	20.694	12.588	4.98	0.000
Age 5.0-5.11					
IBI norm	106	12.821	9.949	-	-
100 days	8	(too few for analysis)			
200+ days	55	28.327	15.964	6.57	0.000
Age 6.0-6.11					
IBI norm	70	18.371	12.368	-	-
100 days	4	(too few for analysis)			
200+ days	23	35.217	14.591	5.42	0.000
Age 7.0-7.11					
IBI norm	69	27.420	15.830	-	-
100 days	1	(too few for analysis)			
200+ days	15	38.200	14.785	2.42	0.018

NOTES ON ANALYSIS:
Cumulative analysis includes all tests through April, 1979.
Current Year Analysis includes tests given between 5/78 and 4/79.
The t-value and probability is based on a comparison between the means of the posttest attendance groups and the IBI norm group.

1.5 MATH SKILLS

TABLE 7. Wide Range Achievement Test, Math Subtest Scores

Cumulative Analysis

Age and Attendance	Number	Mean St. Score	Nat'l %ile	Raw Sc. Mean	St. Dev.	t-value	2-tail prob.
Age 3							
IBI norm	215	-	-	2,828	2.045	-	-
100 days	91	-	-	5.780	2.808	9.06	0.000
200+ days	12	-	-	7.250	3.361	4.51	0.001
Age 4							
IBI norm	151	-	-	4.742	2.904	-	-
100 days	184	-	-	8.245	3.718	9.68	0.000
200+ days	163	-	-	10.460	3.498	15.80	0.000
Age 5							
IBI norm	112	81.348	10th	9.036	4.124	-	-
100 days	103	94.689	37th	12.320	4.227	5.76	0.000
200+ days	237	103.814	61st	14.755	4.148	12.05	0.000
Age 6							
IBI norm	79	87.165	19th	13.582	4.869	-	-
100 days	50	97.680	45th	16.680	4.821	3.53	0.001
200+ days	114	106.386	66th	19.079	4.677	7.89	0.000
Age 7							
IBI norm	80	86.900	19th	19.100	4.851	-	-
100 days	25	92.480	30th	20.400	5.107	1.16	0.251
200+ days	65	100.339	50th	24.031	3.405	7.17	0.000
Age 8							
IBI norm	54	87.278	19th	22.796	4.748	-	-
100 days	11	90.909	27th	24.455	2.207	1.79	0.083
200+ days	38	97.211	42nd	27.290	1.944	6.25	0.000

Current Year Analysis

Age 3							
100 days	19	-	-	5.421	3.097	3.58	0.002
200+ days	0	(too few for analysis)					
Age 4							
100 days	30	-	-	7.233	3.339	4.18	0.000
200+ days	36	-	-	10.611	3.643	10.35	0.000
Age 5							
100 days	8	(too few for analysis)					
200+ days	62	101.548	55th	14.129	5.007	7.22	0.000

TABLE 7. (continued)

Age and Attendance	Number	Mean St. Score	Nat'l %ile	Raw Sc. Mean	St. Dev.	t-value	2-tail prob.
Age 6							
100 days	6	(too few for analysis)					
200+ days	23	102.870	58th	18.609	5.383	4.25	0.000
Age 7							
100 days	1	(too few for analysis)					
200+ days	14	96.929	42nd	22.643	4.199	2.57	0.012
Age 8							
100 days	1	(too few for analysis)					
200+ days	5	(too few for analysis)					

NOTES ON ANALYSIS:
Cumulative analysis includes all tests through April, 1979.
Current year analysis includes tests given between 5/78 and 4/79.
The t-value and probability compares the means of the posttest attendance groups to the IBI norm group in the cumulative analysis.

1.6 READING IN ENGLISH

TABLE 8. Wide Range Achievement Test Scores, Reading Subtest

Cumulative Analysis

Children Whose Primary Language is Spanish

Age and Attendance	Number	St. Score	Nat'l %ile	Raw Sc. Mean	St. Dev.	t-value	2-tail prob.
Age 4							
IBI norm	100	-	-	6.550	4.001	-	-
100 days	150	-	-	8.387	3.438	3.87	0.000
200+ days	125	-	-	10.552	3.901	7.56	0.000
Age 5							
IBI norm	82	79.646	9th	9.329	3.675	-	-
100 days	78	84.603	16th	11.218	4.948	2.73	0.007
200+ days	181	94.453	34th	15.956	6.773	10.25	0.000
Age 6							
IBI norm	66	80.667	10th	14.636	7.603	-	-
100 days	37	84.054	14th	16.243	7.073	1.05	0.294
200+ days	98	94.867	37th	23.439	9.723	6.49	0.000
Age 7							
IBI norm	67	79.209	8th	23.373	9.982	-	-
100 days	16	90.375	25th	30.250	17.556	1.51	0.149
200+ days	57	95.316	37th	37.439	14.669	6.13	0.000
Age 8							
IBI norm	47	79.681	9th	30.915	11.782	-	-
100 days	6	(too few for analysis)					
200+ days	35	99.400	47th	51.029	10.388	8.04	0.000
Age 9							
IBI norm	38	82.658	13th	40.211	15.776	-	-
100 days	3	(too few for analysis)					
200+ days	14	95.786	39th	55.071	3.931	5.37	0.000

Current Year Analysis

Primary Language Spanish

Age 4							
200+ days	32	-	-	10.531	4.080	4.88	0.000
Age 5							
200+ days	56	92.107	30th	14.857	5.870	6.26	0.000
Age 6							
200+ days	21	93.571	34th	22.810	7.821	4.26	0.000

TABLE 8. (continued)

Age and Attendance	Number	St. Score	Nat'l %ile	Raw Sc. Mean	St. Dev.	t-value	2-tail prob.
Age 7							
200+ days	14	90.857	27th	33.000	15.145	2.28	0.038

Too few for analysis beyond the age of 7.

NOTES ON ANALYSIS:
Cumulative analysis includes all tests through April, 1979.
Current year analysis includes tests given between 5/78 and 4/79.
The t-value and probabilities were based on a comparison of the means of the posttest attendance groups to the IBI norm of the same age in the cumulative analysis.

1.6 READING IN ENGLISH

TABLE 9. Wide Range Achievement Test Scores, Reading Subtest

Cumulative Analysis

Children Whose Primary Language is English

Age and Attendance	Number	St. Score	Nat'l %ile	Raw Sc. Mean	St. Dev.	t-value	2-tail prob.
Age 4							
IBI norm	35	-	-	7.600	4.103	-	-
100 days	34	-	-	9.677	3.364	2.30	0.025
200+ days	38	-	-	11.342	4.928	3.51	0.001
Age 5							
IBI norm	22	89.909	25th	13.909	6.838	-	-
100 days	25	96.160	39th	16.200	5.679	1.25	0.216
200+ days	55	97.582	45th	17.455	6.161	2.21	0.030
Age 6							
IBI norm	9	(too few for analysis)					
100 days	13	94.308	34th	23.462	8.608		
200+ days	16	100.813	53rd	26.313	9.782		
Age 7							
IBI norm	11	90.546	27th	35.091	11.273		
100 days	9	(too few for analysis)					
200+ days	8	(too few for analysis)					

Too few analysis beyond the age of 7.

Current Year Analysis

Primary Language English

Too few for analysis.

NOTES ON ANALYSIS:
Cumulative analysis includes all tests through April, 1979.
As the IBI programs serves only a small percentage of children whose primary language is English, and these mostly at the preschool level, there are not enough for analysis (minimum of 10) in a number of subcategories.

TABLE 10. Prueba de Lectura, Serie Interamericana Valoraciónes

(Scores on Reading Test, Inter-American Series)

Grade Level and Test Group	Number	Mean Raw Score	Raw score St. Dev.	t-value	1-tail Prob.
FIRST GRADE					
Comparison*	15	22.067	6.341	--	--
IBI Bilingual	18	29.389	15.197	1.86	0.038
SECOND GRADE					
Comparison	15	27.733	7.667	--	--
IBI Bilingual**	4	36.00	(Too few for analysis)		
THIRD GRADE					
Comparison	17	34.941	9.884	--	--
IBI Bilingual	16	47.375	14.655	2.87	0.004

*The Comparison group tested are migrant children from a neighboring district near La Grulla, Texas. These children are receiving Spanish reading instruction in school.

**Owing to a testing error, ten of the second-grade IBI children were tested using Level 1 and four using Level 2 of the Prueba de Lectura. As the Comparison group was tested on Level 2, only the four Level 2 IBI second grade tests were included in the above table of raw scores. Both levels of the test can be converted to percentile scores using published norms for the test, and from this converted to NCE standard scores. Combining the tests and doing the statistical anslysis on the standard scores, the difference between the means yields a t-value of 1.80 and a one-tailed probability of 0.041.

1.8 CULTURAL CONCEPTS

TABLE 11. Scores on BMHS Test of Cultural Concepts

Cumulative Analysis

Age and Attendance	Number	Mean	St. Dev.	t-value	2-tail prob.
Age 3					
IBI norm	115	17.252	4.526	-	-
100 days	36	20.333	4.427	3.58	0.000
200+ days	0	(too few for analysis)			
Age 4					
IBI norm	69	21.217	4.684	-	-
100 days	114	25.079	5.348	4.96	0.000
200+ days	76	26.842	4.716	7.20	0.000
Age 5					
IBI norm	38	25.658	5.169	-	-
100 days	67	29.403	5.649	3.36	0.001
200+ days	144	31.833	4.971	6.76	0.000
Age 6					
IBI norm	10	26.700	6.929	-	-
100 days	37	33.568	5.194	3.45	0.001
200+ days	68	35.647	4.567	3.96	0.003
Age 7					
IBI norm	10	29.600	6.995	-	-
100 days	22	35.636	4.855	2.83	0.008
200+ days	32	35.250	4.000	2.43	0.033
Age 8 and 9					
IBI norm	16	31.688	4.527	-	-
100 days	29	37.759	4.485	4.33	0.000
200+ days	25	39.480	3.368	6.31	0.000

NOTES ON ANALYSIS:
This analysis includes all tests through April, 1979.
The t-value and probability are based on a comparison of the means of the posttest attendance groups to the IBI norm group of the same age.
Ages 8 and 9 were combined in order to have enough children to do statistical analysis (minimum of 10).

1.9 LANGUAGE, MATH AND READING SCORES OF CONTINUITY AND COMPARISON GROUP CHILDREN: SPECIAL STUDY

TABLE 12. Spanish and English Scores on Peabody Picture Vocabulary Test for Continuity and Comparison Group

Grade Level and Test Group	Number	Spanish Raw Score	St. Dev.	t-value	2-tail prob.
KINDERGARTEN					
Comparison	31	40.000	9.839	-	-
IBI Continuity	24	43.583	7.506	1.48	0.145
FIRST GRADE					
Comparison	30	48.667	10.001	-	-
IBI Continuity	28	50.750	8.168	0.87	0.391
SECOND GRADE					
Comparison	50	54.320	10.748	-	-
IBI Continuity	27	54.630	10.902	0.12	0.955
THIRD GRADE					
Comparison	40	56.550	13.651	-	-
IBI Continuity	30	59.167	10.110	0.88	0.380
		English Raw Score			
KINDERGARTEN					
Comparison	31	12.032	7.190	-	-
IBI Continuity	24	22.000	9.904	4.33	0.000
FIRST GRADE					
Comparison	30	20.100	13.827	-	-
IBI Continuity	28	35.964	12.741	4.53	0.000
SECOND GRADE					
Comparison	50	30.020	16.402	-	-
IBI Continuity	27	43.370	14.375	3.55	0.001
THIRD GRADE					
Comparison	40	35.875	15.693	-	-
IBI Continuity	30	55.400	7.881	6.81	0.000

Spanish score from Form B, English Score from Form A of the Peabody Picture Vocabulary Test.
Comparison Group = Children from neighboring south Texas school district whose families move during year for seasonal farm work.
IBI Continuity = Children in IBI mobile component who received educational services in Texas and in one or more northern locations, and who were enrolled for a minimum of 200 days in IBI program.

TABLE 13. Wide Range Achievement Test Scores, Math and Reading Subtest, for Comparison and Continuity Group Children

Scores in Math

Grade Level and Test Group	Number	Mean Standard Score	Nat'l %ile	Mean Raw Score	St. Dev.	t-value	2-tail prob.
KINDERGARTEN							
Comparison	31	76.645	6th	8.548	4.280	-	-
IBI Continuity	24	106.792	68th	16.625	4.126	7.05	0.000
FIRST GRADE							
Comparison	30	87.933	21st	15.000	3.869	-	-
IBI Continuity	28	110.143	75th	23.000	3.859	7.88	0.000
SECOND GRADE							
Comparison	50	89.280	23rd	21.700	4.652	-	-
IBI Continuity	27	98.111	45th	25.000	3.076	3.73	0.000
THIRD GRADE							
Comparison	40	86.250	18th	24.225	4.117	-	-
IBI Continuity	30	97.433	42nd	28.467	1.814	5.81	0.000

Scores in Reading

KINDERGARTEN							
Comparison	31	75.968	5th	9.581	4.031	-	-
IBI Continuity	24	92.625	32nd	17.292	7.641	4.48	0.000
FIRST GRADE							
Comparison	30	77.267	6th	18.267	6.313	-	-
IBI Continuity	28	93.179	32nd	27.036	9.754	4.03	0.000
SECOND GRADE							
Comparison	50	78.940	8th	26.160	9.968	-	-
IBI Continuity	27	96.333	39th	42.037	14.981	4.95	0.000
THIRD GRADE							
Comparison	40	77.850	7th	32.300	12.980	-	-
IBI Continuity	30	97.800	45th	52.967	8.938	7.88	0.000

Comparison Group = Children from neighboring Texas school district whose families move during year for seasonal farm work.
IBI Continuity = Children in IBI mobile component who received educational services in Texas and in one or more northern locations, and who were enrolled for a minimum of 200 days in IBI program.

TABLE 14. Comparison of Washington and Texas Students on Peabody Picture Vocabulary Test Scores in English and in Spanish, by Age and Group.

ENGLISH VOCABULARY

Group and Age	Wash. Number	Wash. Mean	Wash. St.Dev.	Texas Number	Texas Mean	Texas St.Dev.	t-value	2-tail Probability
NORM GROUP								
5	29	29.414	23.194	52	20.500	16.495	1.83	0.074
6	15	32.733	24.697	54	24.148	21.031	1.35	0.183
7	10	37.000	30.641	52	35.692	25.826	0.14	0.887
8	8	33.875	26.659	37	41.135	25.661	-0.72	0.475
IBI 200+								
5	96	71.667	22.312	111	32.901	18.492	13.67	0.000
6	52	83.712	17.180	67	42.284	22.895	11.28	0.000
7	20	73.500	24.537	48	56.938	22.575	2.69	0.009
8	11	82.091	27.116	34	77.000	15.305	0.59	0.564

SPANISH VOCABULARY

Group and Age	Wash. Number	Wash. Mean	Wash. St.Dev.	Texas Number	Texas Mean	Texas St.Dev.	t-value	2-tail Probability
NORM GROUP								
5	29	67.586	19.919	52	64.558	21.493	0.62	0.535
6	15	65.733	19.948	54	78.963	18.398	-2.42	0.018
7	10	77.100	21.424	52	77.039	18.354	0.01	0.992
8	8	76.500	18.647	37	78.432	23.739	-0.22	0.830
IBI 200+								
5	96	73.323	16.579	111	77.207	16.430	-1.69	0.093
6	52	76.173	20.578	67	80.224	15.616	-1.18	0.241
7	20	76.000	14.157	48	82.521	15.983	-1.58	0.118
8	11	79.182	19.390	34	83.147	17.968	-0.62	0.536

This analysis includes only children classified as Spanish dominant when they entered the IBI program, in both Washington and Texas.

The analysis is based on standard scores (mean of 100, standard deviation of 15). Statistical analysis is between the Washington and Texas means, subgrouped by age for the norm group and IBI program group.

TABLE 15. Comparison of IBI Children with the Project Norm Group on Peabody Picture Vocabulary Test Scores in English and in Spanish, by Age and Location

ENGLISH VOCABULARY

Location and Age	IBI 200+ Number	IBI 200+ Mean	IBI 200+ St.Dev.	Norm Group Number	Norm Group Mean	Norm Group St.Dev.	t-value	2-tail Prob.
Washington								
5	96	71.667	22.312	29	29.414	23.194	8.86	0.000
6	52	83.712	17.180	15	32.733	24.697	9.13	0.000
7	20	73.500	24.537	10	37.000	30.641	3.54	0.001
8	11	82.091	27.116	8	33.875	26.659	3.85	0.001
Texas								
5	111	32.901	18.492	52	20.500	16.495	4.13	0.000
6	67	42.284	22.895	54	24.148	21.031	4.49	0.000
7	48	56.938	22.575	52	35.692	25.826	4.36	0.000
8	34	77.000	15.305	37	41.135	25.661	7.22	0.000

SPANISH VOCABULARY

Location and Age	IBI 200+ Number	IBI 200+ Mean	IBI 200+ St.Dev.	Norm Group Number	Norm Group Mean	Norm Group St.Dev.	t-value	2-tail Prob.
Washington								
5	96	73.323	16.579	29	67.586	19.919	1.56	0.122
6	52	76.173	20.578	15	65.733	19.948	1.74	0.086
7	20	76.000	14.157	10	77.100	21.424	-0.17	0.867
8	11	79.182	19.390	8	76.500	18.647	0.30	0.766
Texas								
5	111	77.207	16.430	52	64.558	21.493	3.76	0.000
6	67	80.224	15.616	54	78.963	18.398	0.41	0.684
7	48	82.521	15.983	52	77.039	18.354	1.59	0.116
8	34	83.147	17.968	37	78.432	23.739	0.94	0.352

This analysis includes only children classified as Spanish dominant when they entered the IBI program, in both Washington and Texas.

Analysis is based on standard scores, mean of 100 and standard deviation of 15.

TABLE 16. Comparison of Washington and Texas Students on Wide Range Achievement Test Scores in Math and English Reading, by Age and Group

MATH

Group and Age	Number	Wash. Mean	St. Dev.	Number	Texas Mean	St. Dev.	t-value	2-tail Prob.
NORM GROUP								
5	29	76.793	16.310	52	78.558	17.107	-0.45	0.652
6	15	82.333	13.600	54	86.241	11.689	-1.11	0.273
7	10	85.500	12.232	52	87.039	10.721	-0.41	0.686
8	8	81.125	11.606	37	89.460	8.235	-2.41	0.020
IBI 200+								
5	96	100.094	17.068	111	105.108	14.441	-2.29	0.023
6	52	105.423	13.911	67	104.418	15.666	0.36	0.716
7	20	94.600	9.456	48	102.188	8.238	-3.31	0.002
8	11	91.636	8.090	34	98.677	7.027	-2.78	0.008

READING

NORM GROUP								
5	29	83.552	8.634	52	75.231	12.897	3.46	0.001
6	15	82.133	15.436	54	80.426	9.986	0.41	0.690
7	10	81.600	12.660	52	78.635	8.774	0.91	0.368
8	8	79.750	12.669	37	79.838	10.946	-0.02	0.984
IBI 200+								
5	96	93.178	11.031	111	92.865	12.844	0.19	0.853
6	52	95.673	12.351	67	88.612	13.668	2.91	0.004
7	20	95.050	15.408	48	95.146	19.130	-0.02	0.984
8	11	94.636	14.895	34	98.853	15.433	-0.79	0.432

This analysis includes only children classified as Spanish dominant when they entered the IBI program, in both Washington and Texas.

The analysis is based on standard scores (mean of 100, standard deviation of 15).

TABLE 17. Comparison of IBI Children with the Project Norm Group on Wide Range Achievement Test Scores in Math and English Reading, by Age and Location

Location and Age	IBI 200+ Number	IBI 200+ Mean	IBI 200+ St.Dev.	Norm Group Number	Norm Group Mean	Norm Group St.Dev.	t-value	2-tail Prob.
MATH								
Washington								
5	96	100.094	17.068	29	76.793	16.310	6.51	0.000
6	52	105.423	13.911	15	82.333	13.600	5.69	0.000
7	20	94.600	9.456	10	85.500	12.232	2.25	0.032
8	11	91.636	8.090	8	81.125	11.606	2.33	0.032
Texas								
5	111	105.108	14.441	52	78.558	17.107	10.30	0.000
6	67	104.418	15.666	54	86.241	11.689	7.30	0.000
7	48	102.188	8.238	52	87.039	10.721	7.88	0.000
8	34	98.677	7.027	37	89.460	8.235	5.05	0.000
READING								
Washington								
5	96	93.177	11.031	29	83.552	8.634	4.31	0.000
6	52	95.673	12.351	15	82.133	15.436	3.53	0.001
7	20	95.050	15.408	10	81.600	12.660	2.38	0.024
8	11	94.636	14.895	8	79.750	12.669	2.28	0.035
Texas								
5	111	92.865	12.844	52	75.231	12.897	8.16	0.000
6	67	88.612	13.668	54	80.426	9.986	3.80	0.000
7	48	95.146	19.130	52	78.635	8.774	5.47	0.000
8	34	98.853	15.433	37	79.838	10.946	5.94	0.000

This analysis includes only children classified as Spanish dominant when they entered the IBI program, in both Washington and Texas.

The analysis is based on standard scores (mean of 100, standard deviation of 15).

APPENDIX B

TECHNICAL REPORT OF THE BILINGUAL MINI HEAD START TEST OF CULTURAL CONCEPTS

The BMHS Test of Cultural Concepts was developed in 1975-76 to meet the need of a test of knowledge related to culture that was appropriate to children age 3-8. It was the finding of the project that most cultural heritage materials are geared to the older school-age child who has the time perspective to learn about history, famous figures, and rather abstract concepts. Other tests combine knowledge questions with attitude questions requiring the selection of words or faces along a continuum of five or more steps from posititve to negative. IBI staff felt the younger children would not be able to respond to this multiple choice answer and that the results would reflect their confusion leading to very poor test realiability.

Content Validity

The project therefore elected to design its own test. Six aspects of culture were selected by the educational director, in consultation with other staff, which he felt were aspects that would be meaningful to small children.

Food was one aspect chosen. Staff then identified food items which they felt were most typical of Mexico--arroz con pollo, frijoles, enchilada, taco, cabrito, etc., and food most typical of the United States--hamburger, hot dog, cherry pie, doughnuts, turkey, etc.

Clothing was another topic chosen. Staff nominated typical items of clothing from Mexico--poncho, sombrero, huaraches, etc., and from the U.S.--T-shirt, tennis shoes, blue jeans, etc.

The topic representing the highest level of abstraction chosen was that of national symbols--the flags of both countries, and the seal of the U.S. with the eagle with the arrows and the olive branch, and the Mexican eagle with the snake in its talons.

The other topics chosen were holidays and celebrations of each culture (particularly those important to young children), songs and musical games (sung by young children or those used at holidays or celebrations which they would hear); and dances (that could be danced by young children).

Most other tests examined by the project before choosing to write its own left out music and dance, which are commonly considered rather important aspects of a culture. We felt this was probably because music and dance were difficult to portray in a paper and pencil test. The project test made a tape to be played on a cassette (singing by teachers, or music from records used for dancing) with a small sample of each song or dance. Hearing this, the children were then asked to choose between four pictures, the one that "went with" the music.

All test items required a nonverbal response--choosing from four pictures in response to the cue given by the tester. Spanish word cues were used for all items related to Mexican culture, English word cues for all items related to U.S. culture.

Field Testing

Field testing was done of the original test and some pictures changed if the children could not readily recognize the object. In other cases, a pair of pictures was tried out on children and the one most frequently chosen to represent something, e.g., the dance the "Hokey Pokey," was selected for use in the test.

Reliability Data

The final version of the test was given to 70 children in the Texas center during January 1976. The scores from this group of children were analyzed to determine the reliability of the instrument. The Kuder Richardson 20 formula for reliability based on the pattern of answers to each test item, yielded a reliability of .90. For a project made instrument, this level of reliability seemed acceptably high.

Norm Data

The IBI project has developed norm data from a norm group of over 250 children as of 1979. This norm data is reported in this report Technical Appendix, Table 10. The norm group were project children of various ages, who were pretested as they enrolled in the IBI program. Approximately 75% of the children were Spanish dominant, over 95% Mexican or Mexican American, and most come from families doing seasonal or migrant farm work.

Administration Data--Time and Cost

The test contains 44 test items and requires from 5 to 10 minutes to administer. It must be given individually. The test book contains 17 plates of four items each (68 picture choices). The same plate of four pictures may be used for more than one test item, each plate containing one or more dummy choices as well as the pictures related to test questions. Testers must also have the cassette tape for the song and dance questions. The test materials cost approximately $7.00, plus the time of staff in assembling the test books, coloring in some items, and duplicating tapes.